How can sound engineers working in large format recording facilities participate in collaborative creativity and experience “creative immersion”?

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Abstract

Record production is often seen in musicology as a combination of two or three (often the songwriters' and producer's) persons' creativity, and often not analysed from a collaborative viewpoint. When looking at technical staff on recordings, the producer often takes centre stage. The creative role of the studio engineer is mostly overlooked, yet highly important. A studio engineer's practices influences the creativity of all of the participants of a recording session, regardless of how creative those practices may be. This research sheds light on the engineer's effect on the creativity of the recording session including the best practices and workflows to ensure the highest creative output.

Included in this research are four case studies of professional studio sessions which I engineered at Visconti Studio. Visconti Studio is a professional recording facility residing at Kingston University's "Hill Campus". Having professional practice based research on an area of musicology which is still in its infancy is invaluable. Using existing frameworks, and my own model, I take a look into the case studies, analysing the creative output and the practices that led to such creativity. The recording engineer may not just facilitate creativity, but also be invited into the collaborative process. In this research I demonstrate how, and when, an engineer may experience being collaboratively creative, but also how they may achieve the highest form of this, creative immersion.

Building upon the works by authors such as Samantha Bennet, Simon Zagorski-Thomas, Toby Seay, and Michael Paul Stavrou, and integrating my professional experience, I am able to offer valuable insight and knowledge which has, until now remained untapped.

Acknowledgements

I would like to thank the following individuals, without which this research would not have occurred. First, Dr Leah Kardos, who is not only my Primary Supervisor, but has been the greatest mentor in all parts of life. I am enormously grateful to producers Tony Visconti, Chris Porter, Chris Kimsey, and Ian Davenport; and Romances, Ralph Mctell, Flight Brigade, and S.O.L. Collective for allowing me to engineer the sessions they bring to Visconti Studio which have greatly contributed to this research. Which leads me neatly on to the Visconti Studio team, particularly fellow engineers, Ebby Acquah and Ali Miller who have been important mentors, colleagues and friends, and help keep Visconti Studio running. Finally I would like to thank all of the staff and students at Kingston University, who provide ideas, critique and support to all of their peers, myself included.

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Chapter 1

This research looks at the creative practices of sound engineers working in large format recording studios. In particular it focusses on the relationship between the a studio engineer, working in their professional capacity, and opportunities for sharing in collaborative creativity; how, when and under what environmental and social conditions this is likely to happen, and how the engineer can prepare for, facilitate, and navigate moments of collaborative creativity in a large format recording studios.

In addition to looking upon current research (practitioner discourse and musicology) into this field, this work will present four auto-ethnographic case studies, analysing recording sessions in which I performed a professional role as in-house sound engineer at Visconti Studio[1], Kingston. The outcomes of this research provide guidance on how a sound engineer can foster creativity in the collaborative studio environment, receiving a tacit invitation into the creative domain, and experience creative immersion.

Large format recording studio refers to a recording facility with multiple treated rooms and the ability to record a minimum of twenty-four channels simultaneously. Traditionally professional culture within such environments has a hierarchy within it: the producer sits above the recording engineer, who sits above the tape operator (if there is one, in smaller teams they might be the same person performing both roles), who in turn sits above the intern/runner/"teaboy". Competent (trustworthy/efficient) individuals were promoted up this hierarchy, and crucially, knowledge (creative, social, musical and technical skills) were passed down through this framework. Up until the recent domination of digital recording, this was the main pathway to vocations as professional studio staff - producers and sound engineers.

Due to the decline in large format recording studios after the digital home-recording revolution, "a relatively inexpensive and portable recording set-up that doesn't require years of special training to operate can produce recordings whose sonic characteristics meet professional norms,"(Zagorski-Thomas, 2016) the aforementioned hierarchy and way of working is experienced rarely outside of renown large facilities - which themselves are becoming a rarity - and this way of learning and passing down knowledge is at risk of extinction. Across the world in the past decade multiple studios have been forced to close

[1] Visconti Studio is a large format, hybrid recording studio at Kingston University. It serves as an extremely valuable teaching tool for music technology courses, and also as a fully commercial recording studio. See www.visconti-studio.co.uk

down; in London threats and rumours of imminent closure of canonical facilities such as Abbey Rd and Air Lyndhurst are commonly seen in the press[2] [3]; in the last 6 months West London landmark studio State of the Ark closed its doors, and as of September 2019, Angel Studios have announced they will be closing at the end of the year:

> Following the recent passing of James and Rosalind de Wolfe, we are sad to announce that the Angel Recording Studio building in London has been transferred to third parties and will therefore be closing its doors as our studio at the end of 2019. Its future beyond that date is unknown.
>
> The limited company, 'Angel Recording Studios Limited' will remain within the de Wolfe group of companies; de Wolfe will continue to develop and licence their music catalogues as they have done for over 100 years.
>
> Warren de Wolfe, James's eldest son, says with heartfelt emotion: "It is a very sad day for our studio employees, the wider creative industries and for all those who have enjoyed recording music within the Angel Studio. I thank all the composers, producers and musicians who have graced the Angel Studio over the course of the past 40 years. It has been a great adventure and an honour to have worked and collaborated on so many marvellous projects in the Studio. Special thanks as well to our incredibly dedicated team. (2019)

Large format studios are continuously at risk due to their high operating costs at a time when, as Zargorski-Thomas has stated, recording technologies are more affordable than ever and the earning potential of recording industries are disrupted by online streaming and changes in mainstream media consumption. Before closing, Angel Studios began selling some of their more expensive vintage equipment; including their plate reverbs, one of which now resides at Visconti Studio. This pattern is becoming all too common in the music industry, and losing studios such as Angel and State of the Ark not only leaves engineers and staff without jobs, but it also creates a dead end to the knowledge transfer that takes place inside these facilities.

The responsibility of providing educational training in audio recording arts has now fallen into the hands of further and higher education providers offering Tonmeister and Music Technology courses. Visconti Studio functions both as a commercial large format

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[2] Smith, N. (2010). *BBC News - Abbey Road for sale - zebra crossing not included*. [online] News.bbc.co.uk. Available at: http://news.bbc.co.uk/1/hi/entertainment/8519706.stm

[3] FACT Magazine: Transmissions from the underground. (2015). *London's AIR Studios under threat of closure*. [online] Available at: https://www.factmag.com/2015/06/06/legendary-air-studios-in-london-under-threat-from-redevelopment/ [Accessed 1 Oct. 2019].

studio facility and as a research environment. My professional experiences in being employed by this studio have provided a privileged insight that has informed research that that sheds light on the benefits of hierarchical knowledge transfer and training in professional spaces such as these for sound engineering students, as well as highlighting the need for preserving studio-situated knowledge that is no longer being passed down via the hierarchical system, that currently resides within an ageing population of practitioners, knowledge and insight that is at risk of being lost to history. I would also argue that if higher education endeavours to continue providing skills-based training for the recording engineers of tomorrow, it should consider pedagogies that include experiential learning in working studio environments, to look in a more holistic way at the skill set of recording engineers. This should include the technical, musical, social and creative aspects of their practice, in addition to considering the unique affordances of working in large format studios, and why this culture urgently requires analysis and preservation before it's too late.

Literature

This research has four main purposes: firstly, to demonstrate how technical roles within a large format recording studio directly effect the creative output of a session. Secondly to shed light on the structures surrounding the creativity within the studio and illustrating the conditions under which an engineer might be invited to be part of the creative process. Thirdly, this project looks into how these practices and phenomena take place in a large format studio and why such a facility and its structures and unique practices are still important and relevant within contemporary music industries. Finally it highlights a wealth of practical (creative and technical) knowledge that will soon be lost if it is not analysed, preserved and passed on. It is therefore paramount that education must continue to find ways to preserve the knowledge transfer through the generations. To preserve the large format recording studio, we must also preserve the unique knowledge base and practices that exist within it.

This research is for three audiences. The first is for other budding engineers looking to have long lasting relationships and high levels of productivity in their sessions and this field. A lasting relationship and repeat bookings is definitely a sign of trust and acceptance from an artist or producer, and the recording process is one heavily rooted in trusting the producers and engineers to realise what you are creating. The Second audience is to

education establishment, such as universities, who have facilities like Visconti at their disposal. These facilities are becoming the places in which the engineers of the future are learning their craft (the lineage of "teapoy", to tape of, to engineer, to producer becoming increasingly rare), and so this is where those engineer's have the opportunity to be exposed to these situations and skill sets. The third and final audience is the wider industry, both recording and academics. Firstly as a way of highlighting the levels of collaboration and creativity available in a large format studio and the skill sets used, but also opening up academia's view on the recording process of music, and how it affects the final outcome, often much more analysed than the process creating it.

Developments into analysing record production artefacts (Moore 2012, Clarke 2005) and musicological discourse around studio practices and creativities (Moorefield 2005, Watson 2014) have proliferated relatively recently in comparison to other forms of musicology. Theorisation around collaborative studio practices remains emergent, with different scholars publishing ideas that overlap, but do not often share the same vernacular or philosophical approach. That said, there are specific scholars who's work (methodologies and theoretical apparatus) I use to underpin my approach and better make sense of my experiences. Throughout this work I will be drawing on Samantha Bennett's 'Attitudinal Matrix' as outlined in her book *Modern Records, Maverick Methods* (2018),

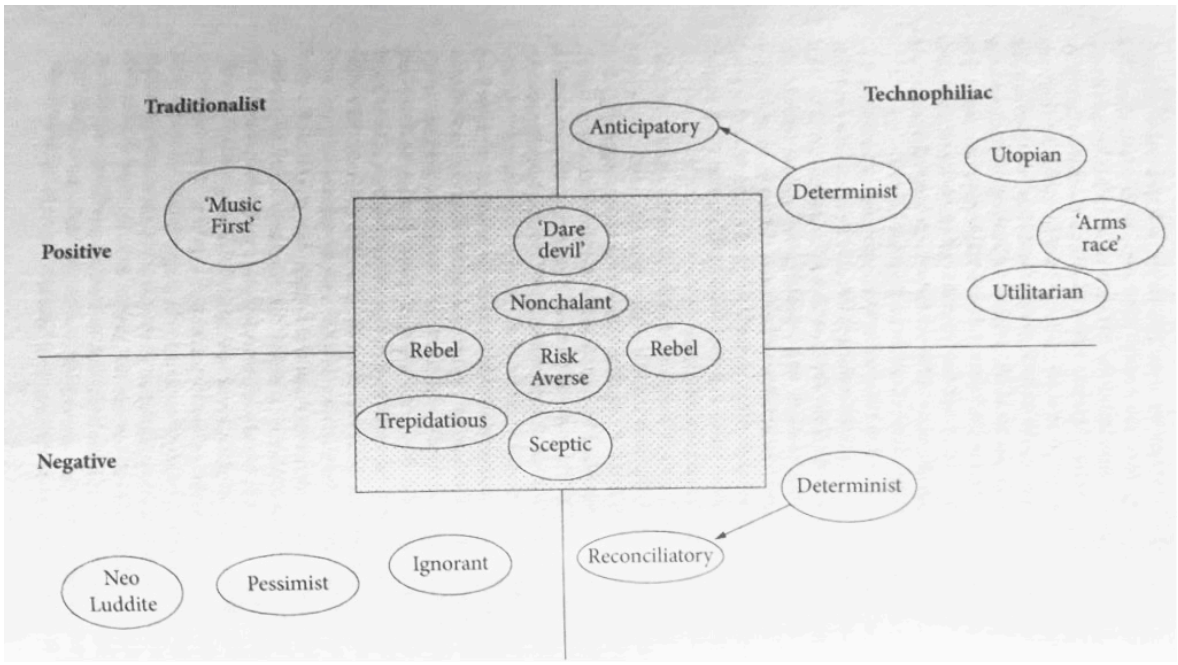

Figure 1. Samantha Bannett's "Attitudinal Matrix" (Bennet, 2018)

applying these concepts to four case studies. This provides a clear model the attitudes

and viewpoints that engineers and producers might approach a recording session from. The way in which someone approaches a recording session directly informs the nature of the creativity that might occur in that session.

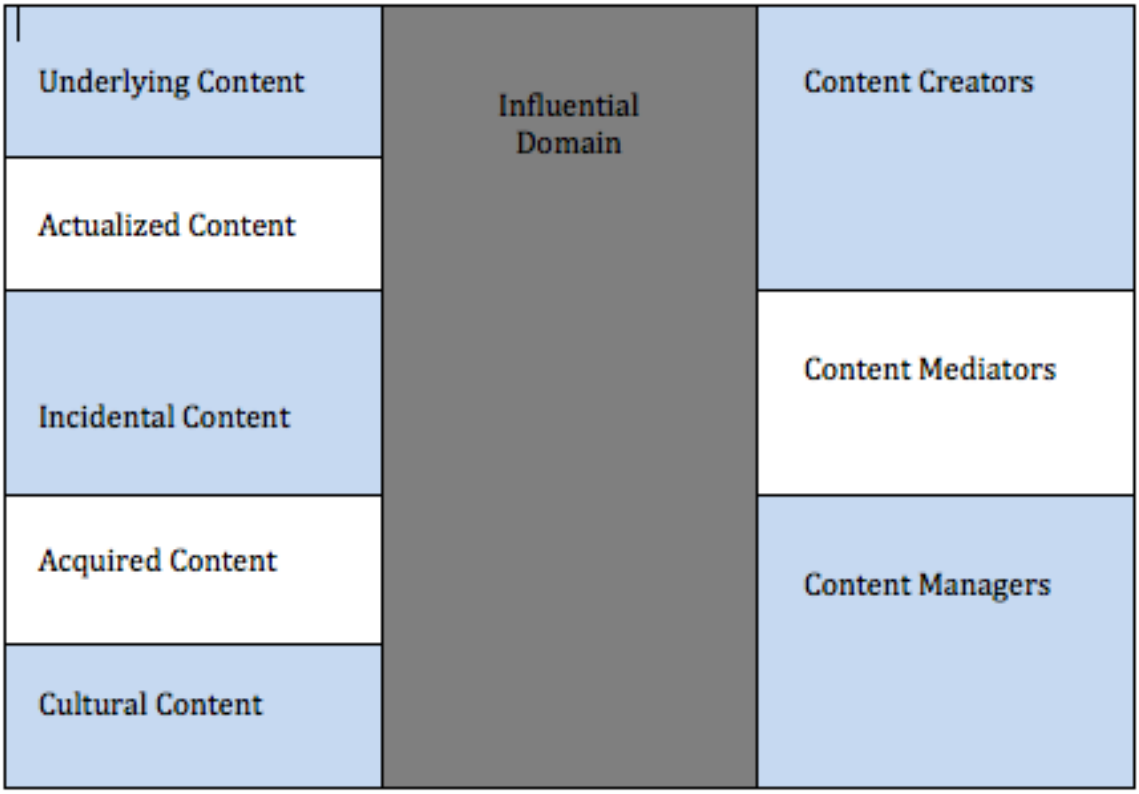

Figure 2. Seay's model showing the agents, elements and domains within a recording session (Seay, 2019)

To further analyse the case studies I will also be using Toby Seay's diagram from his article "Sonic Signatures in Record Production" (2015), which illustrates sound elements, agents, and identifies the *influential domain*. This particular model is important to my research as it demonstrates how the agents in a recording session interact. Seay's concept of the *influential domain* will be deployed when analysing the case studies, raising questions such as: who creates the influential domain, and who controls it? When does the engineer enter the influential domain, and what amount of authorship could they lay claim to[4]?

[4] It is important to note, this research is not concerned with the distribution of royalties and is not written in the hope of sound engineers laying claim to intellectual property. This research is focussed on the sharing of creativity and knowledge, how one can become creatively immersed, and how creativity of the engineer leads to sonic signatures.

Constructed from these two models, and new knowledge I have gained from my own practice research, I have developed a model to illustrate how the stages of recording effect, from the perspective of a sound engineer working in large format studio environments, and facilitate the collaborative creative process, establishing increasingly deeper levels of trust and efficiency, towards a state of flow or 'immersion'. This model exposes how the practices can accelerate or slow down these processes, and will be explained in detail in chapter 2.

Collaborative music making was defined by Christopher Small as "musicking" (1995). Musicking describes the collaborative creative process that musicians go through when performing in an ensemble. It addresses how the environment surrounding the collaborating musicians effects the nature and dynamics of collaboration and creativity. Related to this concept is Mihaly Csikszentmihalyi's term "flow" (Flow, 1990); the term ascribed to experiences defined by a heightened state of concentration and positive emotional engagement in an activity.

While these terms and definitions are useful and relate to the phenomena I am seeking to better understand, neither sufficiently addresses the technical/social complexities within collaborative music production in studios, for those working in traditional hierarchical roles. In Simon Zagorski-Thomas' *The Musicology of Record Production* (2016), he expresses frustration at the lack of acknowledgement of collaborative creativity in musicological discourse.

> When it comes to the forms of creativity there is still a tendency to look for an individual when it comes to the creative force. Even with the Beatles where the Lennon/McCartney partnership was one of the few examples of collaborative creativity where there wasn't an acknowledged, or publicly perceived, leader or figurehead, both fans and scholars have spent more time trying to pick out which pieces of which songs were written by which Beatle than assessing the creative impact of the team on any individual's writing style. (2016, p.105)

Borrowing this notion of the partnership of two songwriters being a uniquely collaborative creative process, I will also argue that the partnership between producer and engineer also yields a unique type of collaborative creativity. There is still the aforementioned hierarchy in place across the staff of the large format studio, and this makes this collaboration more privileged and intimate than the idea of musicking. Engineers should still feel a sense of authorship over the sounds that are recorded due to their role within this collaboration. Unlike flow, this collaborative creativity doesn't create

quite the insulation between the immediate outside world and the participants. It is more self aware, and less independent than flow.

Where my research fits between all of the above is that it is collaborative creativity, unlike *flow*, but more private and exclusive than *musicking*, and focuses on the recording process, which is necessarily collaborative due to its unique environment, and a different type of collaboration to that of a band or songwriting partnership because while engineers can lay claim to partial or shared authorship of a timbral/sonic signature, they cannot usually claim any ownership the intellectual property of the recorded output itself.

Throughout my case studies I shall be applying Bennet's *attitudinal matrix* and employing Seay's notion of the *influential domain* within my own model which is conceived as an illustration of *creative gears*. By applying these theoretical concepts to professional sessions that I participated in, I will demonstrate how *creative immersion* for sound engineers occurs under specific conditions, in the large format studio environment. In demonstrating this, this research work shines light on fresh understandings about the collaborative creative practices and shared immersive experiences that take place within a these environments. Each case study will be followed by reflections and analysis using the *creative gears* model.

It is important to note here that whilst I am asserting that the engineer has creative authorship of some aspects of the recording work, and may contribute creatively to the collaborative effort, I am not necessarily advocating for the engineer to be receiving royalties or credits/copyright as a result. My research is concerned only with better understanding the phenomena of shared creativity and immersion as experienced by technical/support staff in these contexts.

Defining the Large Format Recording Studio

> We define the large-format recording studio as consisting of a console of 24 channels or more; the ability to record 24 or more inputs at the same time, an acoustically treated and isolated control room, and multiple acoustically isolated recording spaces of varying size. (Gullö, 2019, p.119)

Visconti Studio itself has a 36 channel desk with the ability to record and playback 32 channels of audio. The facility contains a 300m^2 octagonal live room, smaller isolated recording booth and foyer areas (all of which can be used as spaces for live recording), a control room running Pro Tools HD, and two tape machines (a stereo Studer A80 machine and a 24-track Studer A827). It therefore qualifies as a Large Format Recording Studio and

this research is directly relevant to such studios as the case studies took place at Visconti Studio.

Despite the widespread use of smaller studios (DIY, project, home studios, mobile laptop rigs, etc.), large format recording studios continue to survive and remain relevant to contemporary culture along with their methods and practices. However, some structures, particularly from the technical staffing of studios, have become overlooked since the domination of digital recording. Producer Steve Albini discusses the drawbacks of losing some of these traditions:

> When the analog era was not such a dim memory for most places, a lot of studios had in-house technicians who had maintenance records, and a personal history, and the sort of oral lore of the studio; so you could ask one person about all of the equipment. In a lot of studios now there is no in-house technician, there is no in-house maintenance person, so there isn't any one person that you can ask. You have to speak to their outside technician, and that outside technician may have other work that would keep him busy and you don't want to monopolise his time. (*Steve Albini Analog Mixing Session,* 2018)

Here Albini touches on the dedicated in-house studio roles that allow for creative work to flow in an efficient manner. Having these defined roles associated and intimately familiar with a specific recording studio environment, maintains continuity across sessions. It also reduces wear on sensitive equipment due to the lower number of different users. Albini cites decline of these in-house roles in studio culture as a detriment to the process leading up to the recording session, causing disruption to what was a system centred around promoting a safe atmosphere within a studio. Having these in-house studio staff familiar with equipment, acoustics and optimal workflow practices facilitates creativity and promotes trust, maximising collaborative potential; those with experience working in smaller/project studios will not be familiar with the skillset required to operate efficiently in the large format facility - session planning and logistics, management, problem solving, maintenance, and remaining sensitive to the atmosphere in the room while remaining mindful of professional hierarchies that are in effect - such skills are not often taught in music technology curricula, yet are still required by world class recording facilities. The signal flow knowledge gained by working in a large format recording facility is complex and extensive, for the unfamiliar (perhaps freelance) engineer, the complexity might take a long time to become proficient with. Similarly, Albini's expectations of the skill sets that the staff should possess, when walking into such a facility, are often shared by others partaking in the recording session.

Expectations play a big role in the psychology of the client, particularly when arriving at the studio for the first time. A professionally run large format recording studio should look to meet and exceed all expectations in order to win a client over and promote an atmosphere of trust. These expectations are informed by shared cultural knowledge about what constitutes a professional-level facility, and that might include the following:

- 24-tracks minimum simultaneous recording and monitoring.
- A large format mixing console (preferably in-line).
- Pro Tools HD
- A good selection of known, best-quality outboard gear (1176, Empirical Labs Distressors, Lexicon, Neve, API, etc.).
- A diverse selection of good quality microphones of each types (condensers, dynamics, ribbons, tube, vintage).
- Multiple monitor speaker sets.
- Acoustically treated control room.
- Multiple booths/recording spaces.
- Echo chamber / plate reverb
- Amplifiers, speakers
- A live room large enough to fit a whole band or better yet, orchestra.
- Grand piano, tuned.
- House drum kit, tuned.
- Facilities:
    - kitchen/catering;
    - toilets;
    - space to socialise and/or relax.
- A highly skilled in-house engineer , with extreme in-depth knowledge of this particular studio.
- Interns/assistants/runners.
- Parking, loading/access.

Dealing with, and attempting to meet/exceed, these expectations starts from negotiating the booking of the session and continues until the client leaves. If a client sees a piece of equipment advertised, or piece of desirable equipment only to be told its faulty/not been tuned, this will stall the creative train of thought and slow the journey to creative

immersion. An example of this would be a session I was planning for a funk combo band. They had booked Visconti Studio due to its collection of vintage gear and Hammond Organ with Leslie speaker cabinet. After some time away, I arrived at the studio the day before in preparation for the session to find the Hammond Organ was heavily malfunctioning before refusing to function entirely. I called the client to let them know of the problem the potential alternatives. The Hammond Organ was an important part of the process for them and, as a result, they cancelled the session.

Often the alternatives an engineer offers will not only stop the client from cancelling, but will also enable the session to run closely to the originally proposed schedule.

Creative Immersion

As mentioned previously, *musicking* (Small, 1995) is too broad a term for the collaborative, shared sense of creative "flow" that can be experience in the large format recording studio. *Flow* (Cziksentmihalyi, 1990) is described mostly as a solitary phenomenon and discourse focuses on the individual's subjective feeling. To refer to the specific, collaborative creativity shared and experienced between studio staff, artists and producers, I am using the term *creative immersion*. Creative immersion fits nicely within Toby Seay's (2019) idea of an "influential domain".

> It is with this systemic approach that the elements and agents in this diagram interact through what I call the *influential domain,* whereby each element has the potential to inform all other elements. This diagram presents an interactive system that deters the study of any one element without considering its content by focusing the discussion toward the influential domain. (2015, p.349)

Seay's diagram (Figure 2.) shows how elements in a recording session interact in the centre, each having a creative impact of some kind. *Creative immersion* is achieved when the creativity gains its own perpetual momentum. Here the collaborative creativity is not only at its highest, but is producing ideas that will remain on the finished article. All involved are experiencing a collaborative form of flow and have a sense of authorship. It is the point in a recording session where all of the elements within the studio space are invited into the influential domain to participate in creativity rather than just affecting it. Traditionally, and for most of the duration in a recording session, the engineer's role is to facilitate the artist and producer's experience within the influential domain. In the first case study, it is clear that the influential domain contains the band themselves (Flight Brigade) as content creators, With the producer (Porter) acting as a gatekeeper to the influential

domain, but also as a content mediators with the other studio personnel. The moment of the drum fill myself and another engineer mime being accepted is an example of content mediators being invited into the influential domain, and creative immersion being achieved.

It is worth noting that there will be sessions where creative immersion, and being invited into the influential domain, may not occur. For example, incase study three's string recording and all of case study 5, the parts were already written and microphones should already be selected and set up (thus efficiently completing the first three gears in chapter 2). In such a scenario there may be little space for the creative contribution of the sound engineer beyond the functional tasks at hand. It then becomes the engineer's responsibility to keep the creative wheel turning for those who are inside the *influential domain*. In this scenario the engineer remains a "content mediator" (Seay, 2015) facilitating everyone's experience within the "influential domain".

Working in a large format studio is by definition a collaborative process, regardless of the creative input your role has in that day/session. So I believe it would be understating the phenomena I am writing about to use the term "creative collaboration" when collaboration is such a large part of the engineer's role. I chose immersion because of the connotations of becoming part of something and affecting it, in the same way that when a human is immersed in water, their movements effect the water surrounding them. This is therefore a much more accurate name.

In my model I have placed *creative immersion* within the *influential domain*, but the producer, artists or musicians must invite (not necessarily verbally) the engineer into the influential domain before the engineer experiences creative immersion. To illustrate how best to serve the creativity of the session, but also increase the likelihood of this "invitation" I have created a model focusing on the journey to creative immersion being a circular process (like a spinning wheel) that can be sped up, or slowed down, by the agents on the right of Seay's diagram. In my model, there are gears for each stage of the process of a recording, from booking the session, and at each incremental level of trust up until being invited into the influential domain. It is important to differentiate between musicking, creative immersion and flow. Pearce & Conger (2002) explain:

> Flow is a state of consciousness in which people feel completely involved in an activity to the point that they lose track of time and lose awareness of self, place and all other details irrelevant to the immediate task at hand. It is what the athlete feels at the peak of his game-deep concentration and a vibrant sense of mastery and

> coordination. It is how totally involved an artist becomes with what becomes her emerging vision. In other words, it is deep engagement and pure enjoyment of an activity for its own sake. (2002, p.217)

Creative immersion, in the sense of concentration and abandonment of the exterior world, is very much like flow. However, the main difference between flow and creative immersion is the aspect of collaboration. In a sense everyone participating creatively in a recording session is on the same "team" to continue the momentum of creativity. It's the collaborative focus and experience that puts creative immersion alongside flow, and not within it.

Musicking, on the other hand is a collaborative activity:

> The act of musicking establishes among those present a set of relationships, and it is in those relationships that the meaning of the act of musicking lies. It lies not only in the relationships between the humanly organised sounds which are conventionally thought of as the stuff of music, but also in the relationships which are established between person and person within the performance space. These sets of relationships stand in turn for relationships in the larger world outside the performance space, relationships between person and person, between individual and society, humanity and the natural world and even the supernatural world, as they are imagined to be by those taking part. And those are important matters, perhaps the most important in human life. (1995 p.4)

Whilst both musicking and creative immersion are essentially collaborative processes, creative immersion differs through a stronger sense of privacy. Small's (1995) definition of musicking is very broad and implies that everyone at a performance is part of the activity of musicking. Creative immersion is exclusive only to those actually engaging and contributing to the creative process. To add to the exclusivity of this phenomenon, creative immersion is an invitation-only experience. To return to our studio, an engineer must gain access Seay's *influential domain* (2015) before progressing to creative immersion. There is a degree of trust to be earned, expectations to be met, and skills to be shown before the engineer is accepted into the influential domain.

Technical Skills

In the definition of the large format recording studio, I outlined that the client has an expectation of certain skill of the engineer. In such a facility, there is usually an in-house engineer. During the downtime between clients, it is this engineer's role to check and service equipment, and book and liaise with maintenance engineers concerning complex or vintage equipment. Traditionally, nothing happens in the studio without their knowledge,

and as a result they have a catalogue of intimate knowledge about the entire facility and its resources. This includes:

- wiring of the studio;
- the age and condition of equipment;
- certain common set-ups and protocols used for specific contexts;
- precedence - what has and hasn't been successful in the past;
- any recurring faults/gremlins and diagnostics.

The latter in itself is a skill. When a magician tricks the audience, there is an illusion of magic. This illusion is almost a divide between the audience and magician, and behind the illusion there are many elements working together, that if seen would spoil the illusion. I would argue that in a recording studio the engineer is the magician and the client the audience - behind the illusion, the engineer is effectively dodging these faults and gremlins in order to maintain the impression of functionality, utility, prestige and trust. When these skills are executed well, the client will believe that the session took place without hitch in a perfectly operational environment, even though that may not have been the case.

> "The key to controlling a complex mix is in controlling your mind, not the equipment. This particular order of tasks helps maintain your concentration in both (brain) hemispheres. By grouping tasks together you are no longer forced to jump between hemispheres." (Stavrou, 2003 p.154)

Stavrou's concept here is about how to maximise efficiency vs opportunity for creativity by creating the conditions for the right hemisphere of the brain to engage whilst mixing. He argues that the left brain tasks must be grouped together and completed in order for the mixer to then fully experience right brain creativity with minimal disturbance. I would argue the same concept readily applies to recording and other sound engineering craft. In order to experience full creativity whilst recording, the left hemisphere tasks must be successfully completed, it is only then that we can have sustained and focussed creativity from the right hemisphere. We can draw a parallel here from Stavrou's right/left brain hemisphere approach and Bennett's *attitudinal matrix* (2019). In essence the *technophiliac* type is perceived as operating more within the left hemisphere of the brain, and the *traditionalist* in the right. This allows us to take a look at a producer's practices and approaches apply the basic hemispheric structure to them and then apply Bennett's *attitudinal matrix* to them. Understanding which tasks use which hemisphere of the brain

allows us to begin the plotting of an engineer or producer onto a similar matrix.

> "The mantra that should guide every songwriter, singer, musician and producer who cares about what the do is, "music first". If such a 'mantra' can guide the entirety of a recordists' successful career, then it must infiltrate each recording, musical interaction and production aesthetic, therefore influencing the aesthetic direction of the record." (Bennett, 2019, p.115)

Describing a *positive traditionalist*, or a "music first" attitude, Bennett illustrates a style of production where only the artist and the take matters, sometimes to the detriment of the fidelity of the recording. The *traditionalist* end of the spectrum may seem to be located the right hemisphere of the brain, but it can be closed-minded to technical development and experimentation, which can be also be considered as occurring on the right hemisphere side, even if only partially.

> "Young recordists at the turn of the 1980s were about to embrace new tech-processual methodologies easily having non experienced years of analogue recording practices" (Bennett 2019, p.117)

Here Bennett looks at the opposite end of the scale to the "music first" *traditionalist*, "Utopianism". A *positive technophiliac*, or *utopian*, is much more open minded to technical aspects, development and experimentation. This is a more common mentality found in a studio engineer particularly as digital systems develop and change over time to incorporate improved capacity, speed, efficiency, more advanced technology, etc. Remaining literate with technology, fluid and adaptable with interfaces and formats, open-minded and curious about new technical and technological developments is a requirement of the contemporary music technologist - at least, for those that wish to remain employable. A producer has the freedom to move between these extremes during a recording session, but in order to facilitate creativity (and also gain the opportunity to be creative), an engineer should be what Bennett describes as *anticipatory*. As the name suggests, this approach anticipating what might happen next is an important specialist skill of the sound engineer seeking to facilitate the optimum environment for creativity, efficiency, and trust.

> "The proliferation of small-scale project and home studios, coupled with a steady decline in professional recording houses over the last 20 years, has led to many facilities operating as single owner-operator businesses. The lack of in-house maintenance staff in such premises is problematic, particularly if the workplace operates on a commercial basis and relies upon the technology in order to keep sessions going. This is not to suggest only vintage technologies and precursors

> require maintenance. Digital and computer-based recording and production systems arguably require as much care; faults will always occur regardless of the technological domain." (Bennett, 2012)

Here, Bennett describes a decline in technical skills as following along with the decline of large format facilities, noting that maintenance knowledge is not only required for vintage/analogue environments, but any technological domain. For sound engineers, alongside a 'hard' technical skillset, a soft skillset is also important. The act of performing and recording music in any setting can be a highly personal activity, and the one member of staff that will be present all times of the recording is the sound engineer.

Interpersonal Skills

It may seem like treading on eggshells at times but, the way an engineer talks to a client, or what they talk about music even generally, can impact the atmosphere and effect creativity. Part of the preparations for the session include conducting research on the artist/client/producer - not only to have a starting point to understanding the artist's aesthetic and approach, but to gain information about the history and cultural context. For example, if a musician has recently broken up with a previous band to come and record a solo album at your studio, it would be highly advisable not to initiate a conversation on the subject without the musician being the initiator. We want to create a safe space that the artist can freely explore, which may include talking about this type of thing, but it's at the artist's discretion. Researching, and doing your homework, on who you are working with, helps establish what may be out of bounds. By showing respect around these subjects the engineer also will gain respect from the artist. Socialise in the downtime, if it's appropriate. As two musicians (or two people in the music industry) an artist and an engineer may have a lot of common ground and shared interests they could talk about during breaks. Find out what their tastes in music are, and listen to that music, get an appreciation of where the artist is coming from. Finding this common ground in conversation helps in building relationships and trust.

Trust in itself is a skill. The artist needs to trust in the engineer that they have the best intentions with the music, but also are capable of realising the artists idea. This trust starts by being prepared when the artist arrives, creating the feeling of safe hands. During the recording session, successfully navigating your way though problems is a very quick way to earn a clients trust. Continue building this trust and you can get invited to the influential domain.

Musicianship

This part of a technician's skillset is often overlooked, especially in higher education settings where there is a separation between disciplines of music practice/performance and music technology. In its simplest form the musicianship of an engineer should enable them to tell when something is in or out of tune, in or out of time. Engineers should understand musical structures and be able to dictate them linearly in the DAW (via annotated markers) or by memory, or with sheet music, as when working to score or with tape. Ideally the engineer should be able to inform (but only when asked) on decisions regarding harmony and feel. This is an incredibly important part of music and, although it may not be the engineer's responsibility, the engineer is usually positioned in an all-seeing, or rather hearing, position in the control room, allowing them to have good perspective on objective decision making.

There are specific tasks within a large format recording studio that require a strong sense of musicality. Often during a longer session, it will become necessary to condense down the board in order to create space for new overdubs. This is equally an musical and technical task. The musicality in this task lies in which tracks you chose to sum together, and how you decide to do this. Do you set up everything summed to lots of mono faders, or do you group them to stereo pairs, and pan them from within the DAW. The choices made here often have musical consequences.

Editing, particularly inside a DAW has the potential to dramatically alter the musical landscape of the recorded material. It is the technical decisions of where to cut, where to fade, which type of fade to use, that are informed by the engineer's musicality, critical listening skill and aesthetic literacy.

Correct application of musicality can help build respect between the engineer and the artist in order to accelerate to creative immersion.

Through reading research, practice research and observational research, the latter two taking place at Visconti Studio in a professional and research-based capacity, I have developed a model that illustrates the cyclic nature of the engineers tasks, and how the execution of these tasks can navigate a session towards achieving collaborative creative immersion - a phenomenon unique to a large format recording studio.

Chapter 2

The Creativity Gears

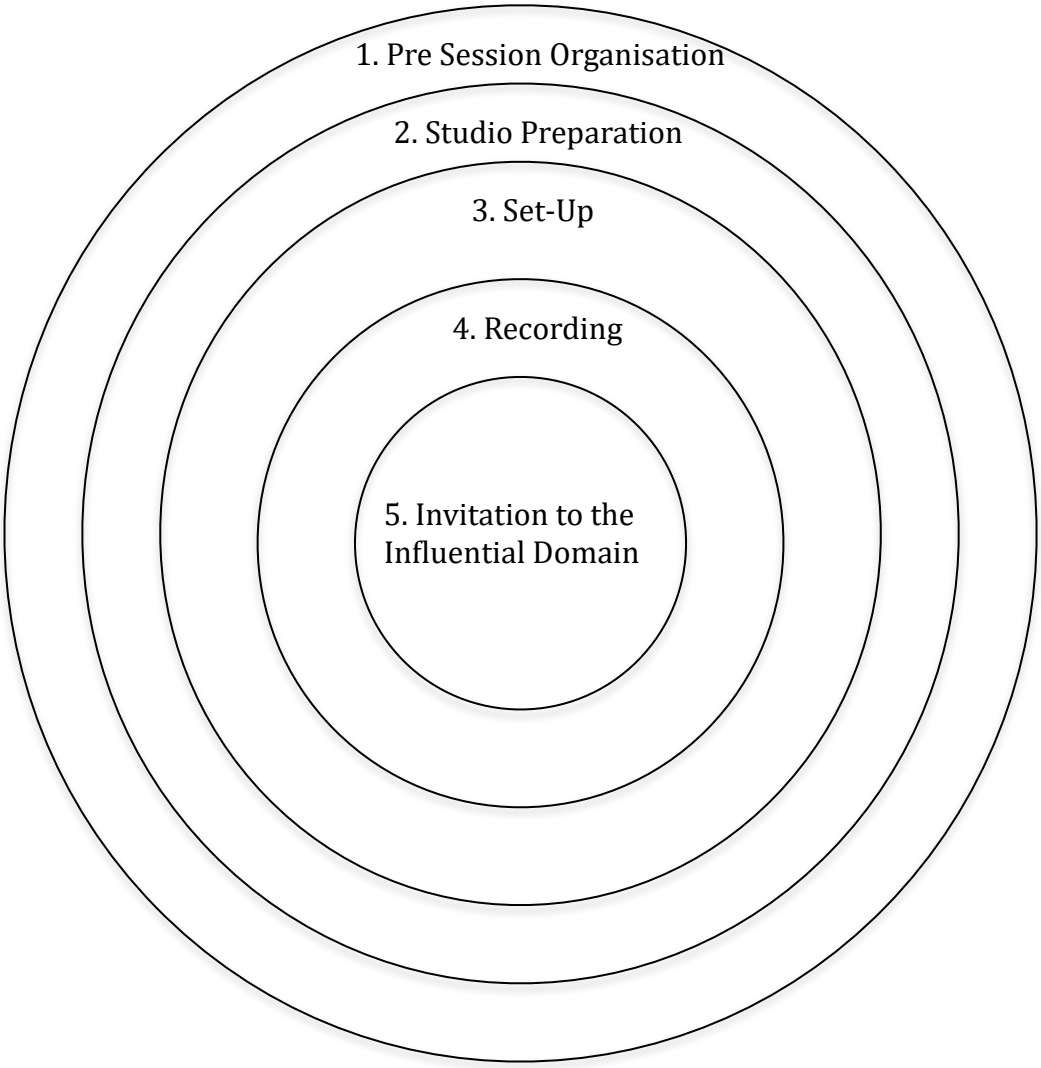

Figure 3. The creativity gears

Figure 3 shows a wheel with gears moving towards the centre representing increasing levels of trust and productivity towards creative immersion. The faster this wheel goes/the more efficient it is, the greater the creative output from a recording session. With this model I'm interested in finding out how sound engineers (and other studio staff), through performing the tasks associated with their role, help this wheel spin faster. The process is

split into stages, which we can also describe as gears. The first stage (or gear) being the organisation of a session with the client and each process can either cause the wheel to accelerate or decelerate. The gears are arranged in chronological order, so the next would be the preparation of the studio for the session. Each time we move from one gear to the next, a step (or decision) adds more speed to the wheel than the previous gear, in the same manner as the gears on a bicycle.

Gear 1 - Pre Session Organisation

- Meet (physically or electronically) the client.
- Advise the client on the correct length of booking and the fees involved.
- Discuss with the client about available equipment for the session.
- Assist Client with sourcing any external musicians, equipment or staff.

> Successful navigation of this stage creates motivation for all parties involved with the session and minimises risk of problems early on in the session (e.g. missing instruments, lack of tape stock etc.). "I have to have a conversation with the technical people at the studio and I have to make sure that it's possible. There are a lot of things that are secondary to the studio that are just as important, like condition of the tape machines, all the secondary supplies that you need for an analogue session: splicing tape, leader tape, empty reels, and grease pencils. There are so many things that if you don't have them it makes you life a lot more difficult and in some cases you actually can't do things. (*Steve Albini Analog Mixing Session,* 2018)

Here Steve Albini describes what it is like to organise an analogue session in a studio (outside of his home facility Electric Audio, Chicago, IL) and the conversations that need to happen. I would argue that this is a dialogue that must happen between producer and engineer, regardless of the recording medium.

The function of the first gear is allow all parties involved in the session to obtain the necessary details they need to begin preparing for the recording session. This helps set realistic expectations from the client, and if completed effectively, begin the process of earning trust and respect from the client.

Successful navigation negotiating of this gear puts as much temporal distance between starting the session and negotiating prices. Continuous conversations about money can sour the atmosphere, hamper creativity and trust-building. In my experience it is best to get this aspect out of the way as quickly as possible. Successful navigation of this gear grants early access to second gear.

The first case study provides an example in how this was a little inefficiently completed before the session, however the biggest example is in the fifth case study. In that example my advise on the correct length to book was not taken. This started a series of decisions which led to the project not being finished. As Steve Albini says in the previous quote "I have to make sure it is possible" (*Steve Albini Analog Mixing Session,* 2018) and in this example I did not outline strongly enough to the MD what was or wasn't.

Gear 2 - Studio Preparation

- Carry out routine maintenance and check any equipment the client has specifically asked for well in advanced.
- Plan out the I/O, input list and mic allocation (this does not need to be set in stone but will save a lot of time, even if not directly followed).
- Create a session template in your DAW (again will save time even if not correctly followed).
- Turn up to the studio well in advanced of the client (at least an hour, depending on studio)
- Ensure the spaces are clean, tidy, vacuumed, free of dirt/rubbish/other peoples belongings and washing up has been done.
- Boot up the control room and begin patching.
- Begin patching the live rooms, building mic stands (as much as possible before the client loads in, without being in the way).
- Set-up foldback/headphones/talkback.
- Put the coffee on.

It is important to note here that points on this gear can take place in the days leading up to the session. Particularly when there are large ensembles, analogue equipment, or specific time constraints involved with a recording session.

> "If the session is meant to start on Friday then I try and get there on Thursday and spend as much time as necessary making the studio suitable for a session so it doesn't eat time up during the session" (*Steve Albini Analog Mixing Session,* 2018)

The function of second gear is preparedness. Albini's mentality regarding making sure the studio is suitable before the client sees it is ideal. As technicians we want to keep up the illusion of the studio and not have their first impressions be the technician running round with a vacuum cleaner. This gear is all about the impression of professionalism. Something

that I think is really evident in all of the sessions contained in the third case study. A's exhaustive set up to meet the clients demands in the days leading to the session, and my time spent before the sessions I was in charge witnessing the set up helped keep a seamless nature to the session and are mainly responsibilities within the second gear. The success of the string session I took charge on during the third case study is all rooted in the time and effort I put into the second gear.

Successful completion of this gear earns respect from the client on behalf of you, but also the studio's professional reputation.

Gear 3 - Set-Up

- Meet and greet the client.
    - Assist them with loading in.
    - Introduce them to the staff and studio.
    - Mention you have tea and coffee ready to go.
- Begin set-up.
    - Talk to the client/musicians about previous experiences recording. What set-ups/ scenarios did they/you prefer?
    - Have concise discussions about microphone techniques and sounds the client is looking for.
    - Finish putting the mics up
- Begin Soundcheck
    - Ensure all microphones sound correct.
    - Ensure all microphones, preamps, and outboard are routed to the correct channels.
    - Ensure the headphone mixes are correct.

In this stage the engineer is really looking to establish the idea of a comfort zone within the studio, whilst at the same time effectively completing the technical tasks and not wasting too much time. The client's experience and first impression as they turn up is important. You should be there to greet them, and not look rushed or stressed out. The client should not feel pressured to "get a move on" with the load in, but also you should not deliberately delay the session and waste studio time. Offering to help load in equipment is a quick way to begin building rapport, remember that your client may have journeyed far to get to the

studio. Part of this gear which is extremely important is the headphone mixes. My experience has taught me that it is really worth spending time getting these right, as the artist can only react and work with what they are hearing, and can get very frustrated when these are not set up correctly.

The function of the third gear is about getting everything perfectly set before pushing record and effective completion of this gear helps puts the session into the next gear with the maximum momentum. In other words if you have successfully and efficiently completed second and third gear, the artist should feel comfortable, trusting and confident enough that the first take you record is a good, solid, complete take. The first three gears are paramount. This is almost the point of no return, and unless these steps are completed, being invited to be creative and experience creative immersion can be difficult.

The importance of this gear cannot be underestimated, this is the moment where the client's expectations and reality collide, I learnt this the most working with Romances previous to the session in the fourth case study. By the time of working with them in that case study I had fully appreciated and realised the best way to approach this gear for them. The coffee is always on, and we get load in done together. Usually hanging over from the second gear, I have microphones at the ready, patch list done and complete along with the Pro Tools file and rough headphone mixes. This was only really achievable because of the producer's concise and accurate nature between what he wanted and what he wanted me to do my way. This level of communication in the first gear directly helps the efficiency of the third.

Gear 4 - Recording/Session

- Catalogue takes with numbers, also taking note of the general thought about each take for fast recall when auditioning takes.
- Effectively label each channel on the Pro Tools session/tape notes as more channels become used.
- Maintain good continuity on the board mix and headphone mixes.
- Make sure the Pro Tools session is laid out/gain staged consistently from one song to another.
- Keep mix reference notes, especially at the end of recording each track/end of each day.
- Work quickly and effectively to facilitate any changes needed, solving any problems, and moving on through tasks.

- Keep notes on any outboard settings that may need recalling. Try to work in a way that is simultaneously tidy, but avoids breaking down any gear/instruments you may use later.
- Back up regularly, especially at the end of each day.
- Maintain control room and session social etiquette.
- Respect the control room as a space that can feel easily crowded.
- Have respect for the artists and musicians regardless of what your thoughts are.

Gear 4 could be summarised as "Good Recording Practices" in every sense of the term. Gear 4 is about recording high quality audio, but also being observant and mindful, keeping a personal record what's happening, what the artist/producer prefers, experiments that were tried, notes that weren't quite in tune and where they are in the song, recall settings for the board as you change song, the list goes on. You may get 3 days into a recording and the artist wants to check if there is a mistake in the 32nd bar of the second take that was performed on day 1. With no records and no note taking, or effective labelling, you could be spending a while trawling through takes to find what the artist is talking about. With note taking, you find you have already identified the mistake, where it is, and that it's (for example) in take 3, not 2, because you started recording one take before the band realised. This aids in swift decision making on the direction of the session, what take to use, where to edit, and what we should do next. It is this swift decision making that is a key part of accelerating though the gears to land at the next one.

The function of fourth gear is purely to keep the momentum of the session going with maximum efficiency and minimum disturbance. To characterise it within Stavrou's hemispheres of the brain approach (2003), fourth gear is almost entirely left hemisphere. This is important: by taking control of all of the left hemisphere tasks and completing them effectively, the musicians and producer involved in the session are free to engage in a sustained right hemisphere experience, a truly creative experience.

In the second case study this was extremely important to complete efficiently and consistently (it is always important). The nature of recording to tape, the lack of undo, meant that the fourth gear's emphasis on good documentation and best recording practice become emphasised. This is because if the tape operator or engineer make a mistake they can cause work to be lost, something a lot less likely when recording digitally.

Gear 5 - Invitation to the Influential Domain

In Seay's approach (2015), the elements (on the left) and agents (on the right) interact within the influential domain. Before the agents are interacting within the influential domain, I would expand on this framework as each agent requires permission to be part of the domain, and until then they are influencing and facilitating it. The Content Creators (artists and songwriters) are the gatekeepers of the influential domain and reside within it. The content mediators (engineers, producers, interns) directly influence and facilitate the creativity taking place within the influential domain, but are not necessarily part of the creativity. Successfully going through all of the aforementioned gears and tasks creates trust, rapport and respect. In particular the artist must feel you respect and understand their work and vision for it before inviting you to join the influential domain.

When musicians are experiencing creative flow the rest of the personnel within the studio can experience that same benefits the musicians do. In the same way that flow creates happiness for the individual (Csikszentmihalyi, 1990), through excelling at the task in hand, we have established that creative immersion is a collaborative form of creative flow, therefore the benefits and affordances of its existence are also shared collaboratively. Certainly in my experience, being part of a recording session in which others are experiencing creative immersion, makes those witnessing the phenomena joyful as well as those that are experiencing it.

Why Gears?

When you ride a bicycle, starting a journey on the smallest gear on the rear wheel proves difficult, this is exactly the same in a large format recording studio. It takes the planning and organisation of the first three gears to run a session in a studio like Visconti Studio. To just turn up and attempting to start at fourth gear wouldn't make sense and would be incredibly difficult, just like attempting to ride a bicycle in a higher gear from standstill.

This analogy is also useful in showing the circularity of these processes, and suggests a sense of momentum which also rings true of my experiences. If you stop peddling on a bike, the bike will still keep moving until its momentum runs out; similarly in a recording session you also only have a finite amount of momentum once this energy stops until it begins to become detrimental to the creativity of the session. By having gears, and not steps or a hierarchy, as engineers we are able to change between them if the sessions

demands. This means that regardless of what may have happened during the previous gears it is still possible (however greatly dependant on the efficiency of each gear, and the creativity of the session) to achieve creative immersion.

Chapter 3

The case studies contained in this work all took place at Visconti Studio, Kingston University. They were all professional sessions where moments of creative immersion were experienced, but are sessions differentiated by genre, set-up, and recording medium. The case studies function to illustrate the utility of my framework, and to align it against those created by Seay and Bennett. In each case study I will highlight the technical, personnel and instrumental details of the session. I will then present a narrative account, condensed to highlight specific moments in which I believe the frameworks can be best applied. I will then discuss my impressions of the creativity of the session (answering the questions: was I invited into the influential domain? Did anyone experience creative immersion?) and how it was fostered or stalled. There will then be a reflection at the end of this chapter and a more in depth look at certain forms of creativity the engineer experiences and whether we have authorship of the sounds we record. Finally in each case study I will use my model to illustrate how the session moved through the gears and where each milestone is located on the journey towards potential shared experience of creative immersion.

Case Study 1

This session took place in August 2017 at Visconti Studio and lasted 7 days. The studio was manned by myself, the producer Chris Porter (known for his work with Elton John, Take That, George Michael) and two assistant engineers: L and B. The band, Flight Brigade, featured a line up of drums (Neil Blandford), Bass (Tom Clay), Guitars (Ollie Baines & Tom Pink), Keyboards (Jonny Barker), Violin (Dory MacCaulay), and vocals (Ollie Baines, Miriam Baines and Dory MacCaulay). The genre to best describe Flight Brigade is “anthemic synth-rock”. This session was recorded digitally to Pro Tools.

Narrative

Porter made contact with me very early over email to discuss equipment in the studio, and the mic selections he wanted to make, and in turn the lineup of the band. There was little planning involved of the actual layout and patching of the studio until Porter turned up. My thought process was to be as flexible as possible to the producer’s wishes and not attempt to second guess what he was looking for. The band would arrive at the same time as Porter and setting up and committing to too much would hinder the load in. As a result,

our main focus was to present a clean and tidy studio with microphones ready, but not patched in.

The majority of what is heard on this album (now released, *Chased By Wolves* (2019)) is recorded live[5]. In nearly all tracks the live takes contain drums, bass, two guitars, electric violin, synthesiser and guide vocals. The first three days mainly consisted of live takes and guitar overdubs. In these sessions, Porter's production style placed heavy emphasis on, and use of, the live room as the bands playroom, and also giving the band a kind of territorial ownership of the live room. The band were made to feel that the live room was their space for the week and they can do what they like in regards to the setup, layout, lighting, and to a certain extent the decor (hanging drapes etc.). As an engineer, my role was clear to keep the technical aspects working and away from the band's concern so the only focus they had was on playing, and the live room was their playground.

This session was productive and efficient, and almost everything recorded ended up on the finished album, notably all of the guitar overdubs. In-between, and after the live takes, we would record extra guitar parts. Usually this was not simply double tracking the guitars in unison. Instead, Baines and Pink had written extra harmony and counterpoint guitar parts, featuring multiple tunings and baritone guitars, in order to create the illusion of an impossibly tuned and played guitar. Between the overdubs, the guitarists would sprint back into the control room to hear what they had created, discussing with each other, and Porter, what the next step was. This part of the session clearly demonstrated to me a moment of high creative productivity for those involved. The engineer at this point needs to work quickly and effectively to facilitate all of the extra tracks, maintain continuity in the board and headphone mixes, and keep good record of what is taking place and how.

During the evenings, and more so as the week passed on, we would record vocal overdubs. Porter, like many producers, had a favoured vocal chain in mind, and a very specific set up requirement for the vocalists' microphones. Each vocalist would be tracking together maintaining line of sight, but isolated in booths/gobos. This proved successful for the first couple of evenings however on the third evening of vocal overdubs, two of the vocal preamps failed along with two microphones. This was an unexpected failure, and despite the lack of reasoning/visible cause to this fault, in a recording session the engineer's priority shouldn't necessarily be to diagnose the fault, they should be focused on getting the session back on track as quickly and safely as possible. For this, we removed

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[5] A multitrack recording where all of the parts are played and recorded simultaneously.

all outboard from the vocal chain (including the preamp) and reverted to desk preamp and EQ before Pro Tools.

During the session there was little creative input from engineers, the size of the band meant that there was always enough people to bounce creative ideas around without consulting the engineers. Despite this, there was one moment where our input was not only listened to and welcomed, but was recorded and featured on the finished album. During playback of a "Heartbreaker" in the control room, myself and fellow engineer, B, discussed how the changes from verse to pre-chorus to chorus would suit an 80s style tom fill (something that might be found on a mid-80s era Phil Collins record). Whilst we were miming and vocalising how this would sound, both the drummer and producer overheard it and decided we would overdub it on top of the already existing drum parts, rather than replace it. This idea can be heard on the finished album.

The Influential Domain

For the majority of this session, the live room itself became a physical version of Seay's influential domain. Porter's method of allowing the band to have territorial ownership of the room and structure to their recording process gives them the feeling of a safe space. It is also worth remembering that in order for creativity to take place within the influential domain, all of the agents within it must combine to create a safe space.

By developing a rapport with the band, and continuously facilitating the bands creativity, the sound engineering team earned access to the influential domain. In this case myself and B's idea regarding the drum fills on "Heartbreaker" was not only listened to, but it was experimented with and kept on the album. This is also very much a collaborative moment of creativity, as the two of us discussed the idea and conveyed it to Porter and Blandford. They then refined the idea: Blandford deciding exactly what to play on the drums for these fills that would best work over his current drum tracks, and Porter deciding exactly how, from a technical point of view, he would like to capture this idea. Referring back to Seay's model, it is clear that we have blurred the lines between content creators (songwriters and artists) and content mediators (producers and engineers). In this moment all four of us are contributing to the creation of the content as well as facilitating or mediating certain elements of the content. This an example of *creative immersion*. To realise this idea, the four of us are all collaborating from a creative stand point to serve a

shared idea or vision. Our creativity at this point is collaboratively productive and positive, as this idea was deemed suitable and would stay on the recording. The events surrounding, and contained in, creative immersion must be productive and positive. In other words, the ideas created must be fitting to the environment (both sonic and physical) and worthwhile, or have longevity (something the artist will want to keep).

The Gears

To successfully navigate to such an experience, we must be spinning the wheels of creativity as fast as it will allow. To do this we must work our way up to fourth gear as efficiently as possible (remembering that we cannot just simply shift into fourth and hope that we have enough torque/momentum to spin the wheel fast enough from there). The most efficient path starts in first gear, and in this session the tasks within this gear were very quickly and thoroughly completed. However, on the first day of this session the second gear wasn't completed as effectively as I would aim to do in hindsight. Not having even a minor patching and Pro Tools plan meant there was quite a while spent in second gear on the first day. Extra time spent in the lower gears of the model means less time spent facilitating and taking part in creativity. Once everyone had arrived we very quickly passed from two, through three, and began turning on fourth gear. The fourth gear is the least creative of all of the gears. As explained earlier, the fourth gear mainly contains note taking and labelling of everything that is being recorded. Good practices here mean that creative decision making should be faster, more informed and more effective. For example, when choosing what takes to use, a good engineer should have numbered takes, with notes on whether the takes are complete or partial takes, and any notes on the quality of the takes (maybe even including some thoughts expressed in the control room about the take). This means the engineer has the information necessary to take any request, voiced in any way, regarding the takes and very quickly locate what the artist/producer is after. This was challenging in this session as we had three engineers. It very quickly became apparent that we needed to work on Pro Tools in a uniformed fashion in order for us to be effective at all times in our role.

Moments of creative stall, like the vocal preamps failing, threaten to (and in this case did), put the session temporarily back into third gear. This failure caused us to rethink the vocal chains we were using and opt for a solution that minimises risk. We identified the reliable signal path and utilised it to bring the session back online and allow us to shift

back into fourth gear again.

Successful navigation of third and fourth gear, even with failures and stalls, is what leads to being invited to the influential domain. In this example, our successful navigation of these two gears would have earned us the trust and respect needed to feel free to float our ideas (such as the drum fill) to the band. How we dealt with the preamp failure, and the speed in which the session moved back into the fourth gear, would prove to the producer and band that we are trustworthy, knowledgeable and motivated to help them realise their vision.

This session is therefore a strong example of how large format studios, and unique environmental affordances and their specific practices, help spawn and facilitate creativity, creative immersion and foster moments of collaboration within a project. The diagram

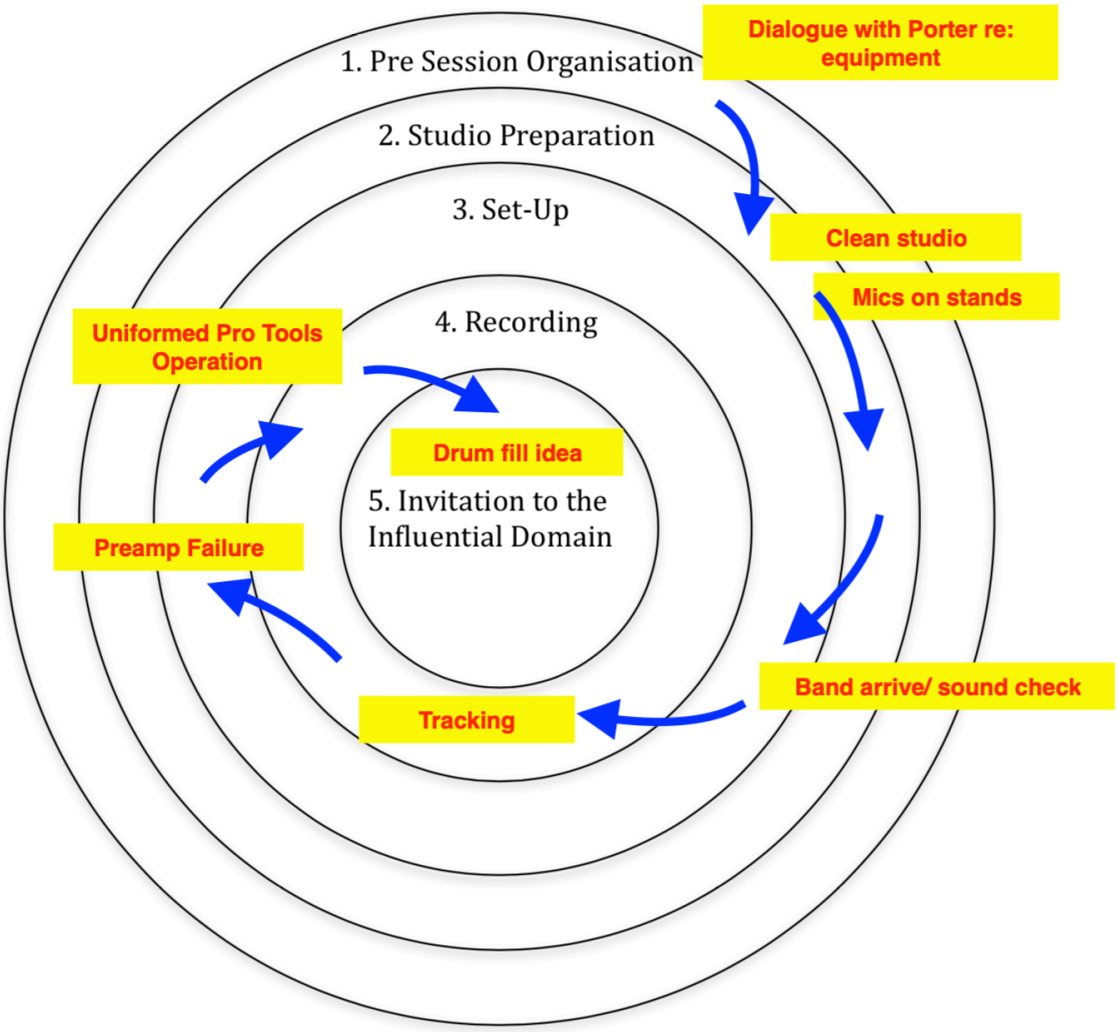

Figure 4. Flight Brigade session's creativity gears

shows how even thought there were stall in the session, the engineers still received

invitation to the influential realm and even experienced some creative immersion.

Case Study 2

This session took place at Visconti Studio in February 2019. The producer, Chris Kimsey (known for his work with The Rolling Stones, Marillion, Peter Tosh), brought in a group of musicians (S.O.L. Collective) who had written a latin inspired album together, consisting of 12 individual (but interconnected/continuous) tracks. The main musicians/composers were Stuart Zender (bass), James Larter (piano, marimba, percussion, vibraphone, celeste) and Ollie Clark (classical guitar, electric guitar and mandolin). In addition, there were also sessions musicians hired to play trumpet, string ensemble (trio), and backing vocals. This session was recorded entirely to 24-track 2" tape across six reels.

It was Kimsey's decision to record the main trio of musicians (Zender, Clark and Larter) live[6] for every album track. Setting up the live room to accomplish this task at the same time as achieving enough isolation to re-record some parts on the tape if necessary, and getting the tape machines ready was challenging. As a result we used the previous day to set up the studio and discuss any further concerns anyone was having about the requirements of the session. Before the prep day ahead of the session itself, myself and Kimsey interacted throughout the month leading up to discuss the session logistics, instrument hire and access/load in, the studio facilities, technology and equipment resources. Also included in these discussions was the tracks list, their runtimes, the instrumentation and arrangement of each piece, and which pieces/instruments we would be tackling each day and at what times. This is a level of planning that isn't normally covered when preparing for a digital session, but because we were working within a purely analogue recording environment, it was necessary to make sure that the session did not exceed the limitations of the technology (24 tracks of audio) and the media we were using (2" tape at 15IPS with dolby SR). Tape stock is expensive; leading up to this session it was necessary to quickly calculate out how much tape was required from the runtimes (making generous allowances for multiple takes), plus all of the secondary items needed to carry out an efficient analogue recording session (chinagraph pencils, razor blades, editing/splicing tape, leader tape, spare take-up reels etc.). As a result of the decline in analogue recording,

[6] All of the trio's parts were multi-track recorded at the same time, but this time recorded to tape. This has higher risks involved as tape is a much more destructive and committed medium to record to.

supplier's stock of tape and tape accessories is prone to running out, and taking large amounts of time to arrive. Therefore it was imperative myself and Kimsey had this meeting months in advance. Even so, despite our organisation, I still wasn't able to source enough leader tape and take up reels to be consistently efficient throughout the session.

The dedicated 'prep' day where we set up the microphones before the session officially started was imperative to prevent losing whole first day of recording to technical exercises and mic placement. On this day our task list was as follows:

- Tape set up
- Line up tape machine to 15 ips
- Calibrate Dolby SR
- Arrange room for live but isolated performance from the main trio
- Load in marimba, vibraphone and percussion instruments
- Choose and set up microphones for all instruments (including those not present)
- Set up headphones
- Check all microphones
- Begin a default tape machine and board layout for the instruments that will be featuring on most of the tracks.

Working to tape requires the engineer, tape op and producer to have good knowledge and critical listening memory of the music they are recording in real time, due to the lack of visual information during the session (without a DAW there are no screens to place visual markers or to look for visual signatures within the waveforms for navigation). The tape op must take note of where each section of the music begins and ends, where there were mistakes, and where each of the takes are on each reel. This is a highly engaged and musical process and it requires the engineers to become intimately aware of what is occurring in each piece of music. Because of the destructive nature of recording to tape, the tape op must be very "anticipatory" (Bennett, 2019). Poorly organised tape operation will greatly increase the risk of losing progress in a session and erasing something that needs to be kept.

The first three days of this session were spent getting the main rhythm takes from Zender, Larter and Clark, and starting a master reel. There were ten major edits in the whole album, which I had to complete. It's important to note that editing on a tape machine

doesn't necessarily fix anything inside the individual tracks, but it allows you to combine two or more good takes to create one great take. During this part of the recording, I experienced a *flow* phenomenon while editing tape. This is something that is inherently based in problem solving, but also requires a strong sense of music from the tape operator, especially with rhythmic precision. I would still describe it as a collaborative form of creativity because of the process of choosing the takes with the producer and artist, even though the precise place of where to edit is often left to the tape operator.

Once we had a master reel, the overdubs could really begin to take place at a much faster pace. Despite the advantages of compiling all of the master takes onto a master reel, in the middle of the week there was a major problem, directly caused by this workflow and miscommunication from the band. When you cut a master take out of a reel and onto the master reel, you are setting a defined limit for where any overdubs must end before you roll onto the leader and then begin overwriting the beginning of the next song. I had made sure to ask the band whether there where any extended endings that would need recording onto the end of these masters, they told me there weren't. However, whilst overdubbing strings on "Aquilare" we got to the end of the song, but the strings hadn't stopped playing. I noticed all the meters suddenly drop for a couple of seconds in unison and then raise together before I quickly realised what had happened, stopped the tape machine and began running into the machine room (where our 24-track machine is kept), whilst also simultaneously trying to communicate to Kimsey that we need to send the band on a break whilst I sort the problem. When I arrived in the machine room, I saw we had run through the leader tape and recorded over the first six inches of a piece called "Isabella". Immediately I put the machine into master safe, wound back the tape and pushed play. Just as the strings we had erroneously recorded onto the front of "Isabella" cut out (from me stopping the machine) the first correct notes of the piece rang out, completely intact. We had not erased anything, but I still had problems to fix, the session was now at a standstill. Simply put, I needed to erase the erroneous strings, without damaging the correct parts on the tape, and also splice a large amount of tape in-between the tail of "Aquilare" and the leader tape that follows. With no take up reels free to aid my editing process, I had to get creative with the solution. I found the reel with the lowest amount of tape on it, cut the master reel to the right of the leader tape and edited the left hand reel onto the reel with the lowest amount of tape. Then I edited a fresh piece of tape onto the tail of the right hand reel and made sure we had plenty of time to fit the ending and then edited the whole master

back together again. This was yet another process in which I experienced a flow state, despite the pressurised atmosphere. In the same creativity brings joy in a flow state, as a technician, successful navigation and solving of a problem and "saving the session" also brings similar feelings of joy, however one hopes to never need to do it.

Despite the destructive editing, near wiping of the introduction of a track and the unique solution I had of solving the problem, the album, *Reveries* (S.O.L. Collective, 2019) was released without a hitch, and remains a proud example of music that leverages the unique affordances of a entirely analogue recording workflow. This is something that is relatively rare to see and hear (and experience) in contemporary music culture.

Invitation to the Influential Domain

It is important to understand that unlike some sessions that are based solely in Pro Tools, working with tape will always be both a creative and technical practice for the engineer. The restrictions of working to tape pushes your mindset in the direction of Bennet's "traditionalist" and away from the "technophiliac" (although there are moments that contradict this). We had only 24 tracks on the tape to record to, and 6 reels to record the whole album onto. By today's standards this is a heavy restriction that requires technical and creative thinking to work around.

Moving back to Stavrou's hemispheres of the brain (2003), when working to tape you must use both hemispheres to inform the decision making process. For example, when recording the string section for this session, to save tracks you could record them down to one track together. The right hemisphere way of thinking may say yes, having a family of instruments on one fader seems like a good musical thing to do. However the left hemisphere way of thinking may say, no I want to EQ each instrument differently so they carve space for each other and this is not possible when they are recorded to one track. These are two very extreme ways of thinking about this problem and fortunately there is a third solution, recording them separately and then mixing them down to one fader (doing all of the individual processing that the left hemisphere wants) leaving the originally recorded tracks free to use again.

Moments in which an engineer can experience creative immersion while working to tape, often come in the form of problem solving or executing high-risk tasks such as editing and drop-ins. The restrictions of working to tape moves your mentality towards in Bennett's "negative axis" on her *attitudinal matrix*. This is because there are certain

practices that are impossible with tape, but are a given in today's digital recording practices. For example, we were limited to 24 tracks, yet if we were recording to digital a lot more instruments may have been double, or triple, tracked. Contrary to this, editing and drop-ins require a more positive location on the matrix. During these processes, you are invited into the influential domain by the artist to attempt to successfully change something on the tape for the better. When executing a drop-in there are stages to the thought process:

- Is the part the musician wants to replace bad enough for the risk?
- Are they good enough to play it better?
- Do I have somewhere I can drop-in (engage record) without audible noise?
- Do I have somewhere I can drop out?
- If this goes wrong, do I know where I will be dropping in/out next?

When each answer to these questions is yes, it then becomes a creative process of timing and musicality from the tape op to successfully complete this task.

Once the producer has decided the rough structure of which takes will be prioritised with the artists, it is the tape ops' task to determine how to edit these sections together. This is a creative task and requires a level of confidence/mastery and lateral thinking in order to execute edits that sound seamless. Both the editing and the drop-ins are examples of creative task for a tape op, and continuous successful completion of these tasks leads to both an individual feeling of flow and collective sense of shared creative immersion. The immersion happens through working as a team and your vital function role within the team as tape op entrusted with creative tasks. However, flow also happens through the solitary act of editing tape, particularly if there are complex/multiple edits that are successfully executed, which for me resulted in a feeling of temporal focus and personal gratification. I also felt a great deal of respect from the artist with each edit.

Working to tape, but maintaining the artists' creative immersion relies on expectation management. By successfully working the tape machine you are meeting a certain set of expectations, however in today's world of 'unlimited undo' and sophisticated editing software, the restrictions of a tape-based workflow may expose a producer's ignorance, or expose an artist's vulnerabilities, creating a potential minefield for the sound engineer/tape op. It's also easy to forget that there are so many common things that tape simply cannot achieve; for example, the artist wanted to continue overdubbing and double tracking trumpet parts, but we had filled the tape up. We explained to the artist that we would have

to lose something to be able to have a free track to condense the channels down. Similarly the moment I had to edit several feet of fresh tape onto the end of “Aquilare”, everyone’s creative immersion was broken and the session had stopped. This is very damaging for creativity and requires good management of the situation whilst the tape op is working away. Quite often the best thing to do at a time like this is take a break, and so they did.

The Gears

In this diagram we sped through the first two gears with ease, unlike the first case study. This was caused by having multiple face to face conversations with Kimsey and deciding to take extra time to full prep the studio ready the day before. As I mentioned above, the task of editing to tape is a highly creative one. Because of this, when you are asked to edit, you are asked to step into the influential domain. In this session, Kimsey, once choosing where to edit, could have performed the edits himself. Kimsey has decades of editing to tape over my few years. This was a strong invitation in to the influential domain by him as the producer to trust my skills, but also a strong demonstration of trust to the artists and everyone involved in the session.

Also shown in the diagram is how the problem with the ending to “Aquilaire” stalled momentum during the session and sent me back to third gear despite the creative nature of this problem solving. This problem moves the engineer out to the third gear as the problem is stopping recording from happening and therefore cannot be located in fourth gear or above.

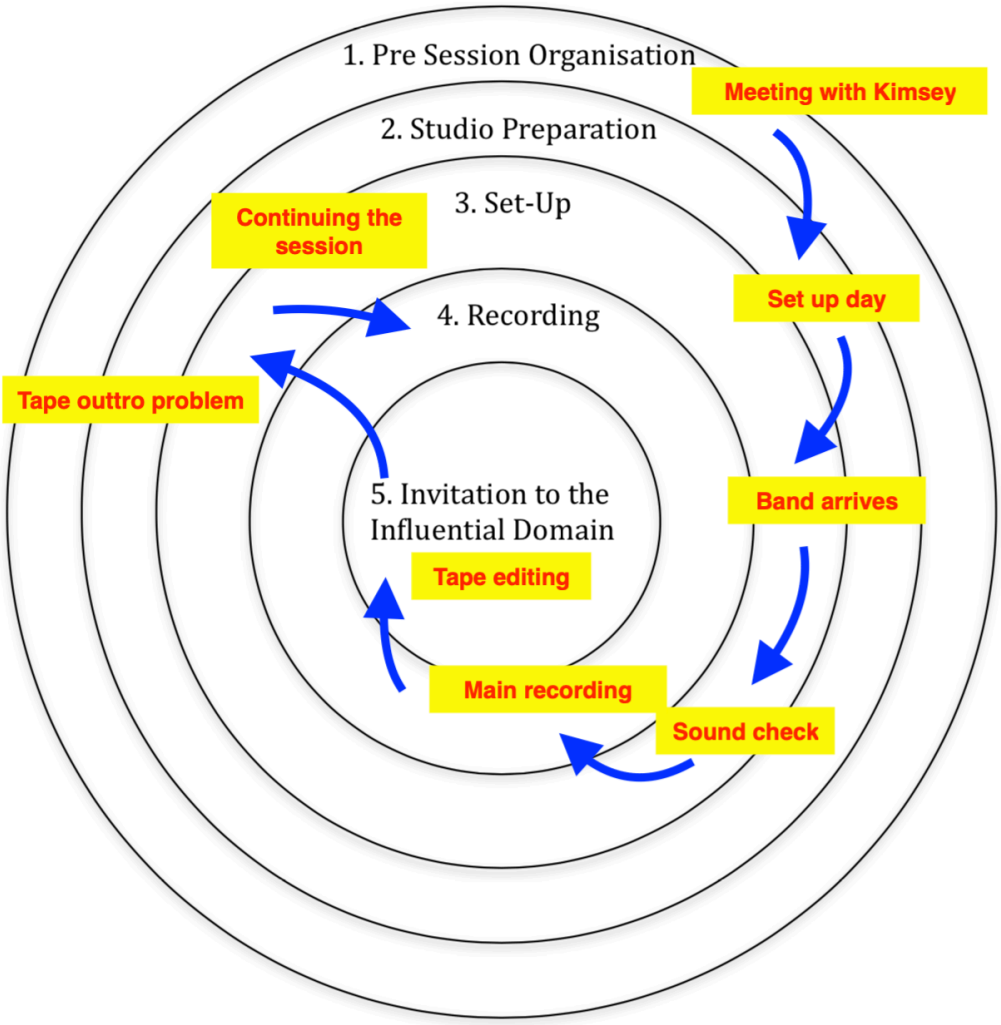

Figure 5. S.O.L. Collective session's creativity gears

Case Study 3

Narrative

This session was brought in by producer Tony Visconti (known for his work with David Bowie, T-Rex) and the engineering was split between myself and our other in-house engineer A. The artist, Ralph McTell, already had a long history with Visconti, having worked on previous albums together over 50 years ago. During the lead up to the session, A had told me that Visconti wanted to work in a way where all of the instruments were tracked separately on the album, but were set up, with microphones, and ready at all times.

This included two pianos, acoustic guitars, vocals, drums and Hammond organ/Leslie.

Originally Visconti had asked A to engineer the all ten days of the session, but the session took place in the middle of festival season in August 2018. As a result A was unable to commit to three days of the session; they contained piano tracking, backing vocals and drums (each on a separate day). A month after finishing the session Visconti and McTell returned to record a sextet string ensemble which I engineered alongside Chris Porter.

A was very efficient at moving through first and second gear, particularly with the unusual requests McTell had asked for. I went to meet A to discuss the session the day before to find a complex and unusual set up. McTell had requested a loudspeaker in the live room with him playing back only the reverb tails on his vocals. A had been warned by Visconti that McTell liked to work without headphones and that we may need to set further monitors up at the piano and the guitar areas. We run an entirely digital headphone system at Visconti Studio, and this system is not readily compatible with monitors; running monitors in a traditional format would change the way in which the engineer uses the auxiliary buses on the desk. A wanted to keep everything uniform so all options (headphones, monitors, nothing) were available for all musicians participating on the album. To achieve this he duplicated the auxiliary sends from the mixing desk in the control room, sent them back into the live room to a digital mixing desk that we could control remotely from an iPad in the control room. This was a complex solution for a seemingly simple problem, but it enabled us to switch between working with McTell and other musicians (who may prefer headphones) seamlessly.

I made an effort to attend the days that I wasn't engineering. As the engineer stepping in and taking over the session, attending beforehand and being visible and aware of the project-in-progress provides good continuity for the artists, musicians and producers involved, but also helps accelerate my own first and second gear. Attending the session before gives you insight to the direction the session is heading, without the pressure of having to run the studio at the same time. It allows you to focus on whats going on, practices the previous engineer is doing and how best to match him to keep the continuity (that is if the previous engineer is doing a good job, which A was). Visconti produces with a "music first" attitude to the recording session. He has a very strong background in arranging, and tackles production from that angle. This creates clear boundary lines as to what the engineer's domain is and what he expects of those performing that role. At the

end of each evening, Visconti would give myself or A a verbal list of tasks to complete that evening, what he wanted ready in the morning, his estimated time of arrival and also the musicians ETA. Meeting these requirements allows him to focus less on the technical aspect of the session and more so on the creative aspects.

An example of a day in which this was effectively achieved was when we recorded backing vocals with Jessica Lee Morgan. Backing vocals is a simple setup, but can be a very fast-paced session, with the nature of backing vocal arrangements often requiring efficient multi-tracking and layering of short takes in quick succession. Because of this, the engineer must organise the Pro Tools file and mixing desk to best facilitate the speed of this process and not slow the session at all.

Visconti takes great enjoyment in arranging music and experiencing the realisation of his ideas. In this particular session he was arranging parts with Morgan. As each part developed and, the next part began recording his arrangement slowly became realised, he became very positively animated as he continued to arrange backing vocals across the album. My role in this was to make the technical parts of this process seem transparent and unnoticed. For a large portion of this day Visconti wasn't even in the control room, instead he was stood with McTell, Morgan, and arranger/mandolin player Frank Gallagher, arranging and recording group backing vocals around one microphone. This demonstrated to me the trust that the group had in the engineers' set up and tracking workflow. This is an example where creative immersion was occurring, but I was primarily facilitating it's occurrence by remaining focussed on the technical integrity and efficiency of the session. During such an occurrence, the engineer must make the process, and any technical changes, as frictionless as possible to avoid stalling the participants out of creative immersion.

Whilst tracking the piano, McTell had requested to record vocals simultaneously. Whilst I was able to facilitate this with ease, Visconti and I came across some problems when deciding to choose and edit together takes. There were some takes which we wanted only the piano from, keeping the vocals of the previous take. There wasn't too much unwanted bleed from the piano on the vocal microphone, but there was vocal bleed from the loudspeakers in the studio (McTell's preferred method of monitoring) on the piano microphones. This was not so much an issue if we wanted to edit the takes intact (piano and vocals together). McTell felt he couldn't accurately play the piano part (particularly the structure) without singing. To solve this problem Visconti and I spent the break building

the song from the takes he wanted, taking note of which sections needed piano replacement. We then asked McTell to play each individual section we needed separately, piano only, in the hopes we could attempt to replace these parts. This session was not recorded to a click, which caused even more complications. With a bit of nudging, and some trickery, we ended up with a complete take, which all seemed pleased with. It made it on to the finished record, and once enveloped in Visconti's characteristically lush production, you cannot tell which piano track it is, or the extent of the complex editing process that was involved.

McTell, Gallagher and Visconti returned a month later to record a string sextet. During the final day of recording in August, Visconti and I discussed the technical requirements for September's string recording. He was very specific right down to microphone choice and placement within the room, and had asked Porter to attend the session. Before the session I needed to quickly source an extra pair of Neumann KM184s (the studio has two pairs, we needed three pairs), and three extra single eared headphones for the string players.

Porter suggested we should meet rather early at the studio. We had both detected a degree of anxiety form Visconti about this session over email (he had sent the Pro Tools files over in advance for me to integrate into the studio), and wanted to make this session as seamless as possible. I arrived at the studio and laid out the live room, setting up the seating for each member of the ensemble, their stands and headphone mixes. I set up the patching, Pro Tools I/O, desk layout and microphones before lunch, being really thorough about the tidiness and safety of the session (this is always important, however when having a larger ensemble in the live room, this becomes more likely to be an issue if not looked after correctly). Porter turned up at lunchtime with the extra microphones. We checked that all of the microphones were getting good strong signal, from the preamp, through Pro Tools, to the speakers and the headphones, which all had arrived. Everything was working perfectly.

During this recording there were no technical issues. If there had been any faults, myself and Porter were at the studio early enough that they would have been rectified with a large amount of time to spare. The string ensemble were of the highest calibre, often their take of the arrangement where they were sight reading was close to perfect, and in some cases may have been the final take used on the album. Due to the cost of these musicians, and the union rules around session work, we had a strict time slot with them. This creates a

pressure on the engineer that is akin to working a live concert. Similar to working as a live sound engineer, the scheduled time between the ensemble's arrival and recording was small. This, combined with Visconti's role as an arranger for some of the songs, meant that it was necessary for myself and Porter to turn up as early as we had. As a result the session was flawless from a technical point of view.

The Influential Domain

During this session I was only invited into the influential domain once, and that was when Visconti asked me to help construct the editing of the piano performance. Working without a click or grid means the engineer's rhythmic feel is directly influencing the rhythmic nature of the editing process. In my experience, however, digital editing is a task that I am much less likely to experience flow and creative immersion from, as opposed to analogue editing highlighted in the previous case study.

I did witness Visconti achieve creative immersion. His work with the backing vocalists was clearly a such a moment, and this was felt in the creative atmosphere of the session as a positive experience for all involved and witnessing. This period of productivity was improvised; we had planned to record backing vocals, but there weren't any set arrangements. The backing vocals were composed live, arranged on the spot in the session by Visconti.

During the string recordings, it was clear that the engineers were not welcome within the influential domain. This is not intended to ostracise, it just wasn't the engineer's place to get involved with the creative process in this context. In a string recording, such as the one in this chapter, the engineer's role is to facilitate the creativity of those within the influential domain, with flawless recording practices (spinning the fourth gear as quickly as possible). Due to the restraints of time in such a session, any experimentation is rare, but if the artist, or producer, does decide to experiment the engineer needs to be extremely fast to avoid stalling the session. In this situation, the engineer is best when aligned with the *anticipatory* area on Bennett's a*ttitudinal matrix*. It is important that the engineer attempts to predict the action or experimentation that may take place, and have equipment semi-set up and ready to keep the down time to a minimum. Fortunately, the greatest amount of experimentation in this session was the movement of players between their seats in the ensemble.

The Wheel

For the purposes of accuracy on this diagram, we will use it to represent the strings session as that was the session where I was present for all of the gears. What is particularly important in this session is how far myself and Porter got through the initial stages/gears before Visconti and the players arrived (by which time we were already spinning in third gear, this was ideal due to the time constraints of this session). As previously mentioned in

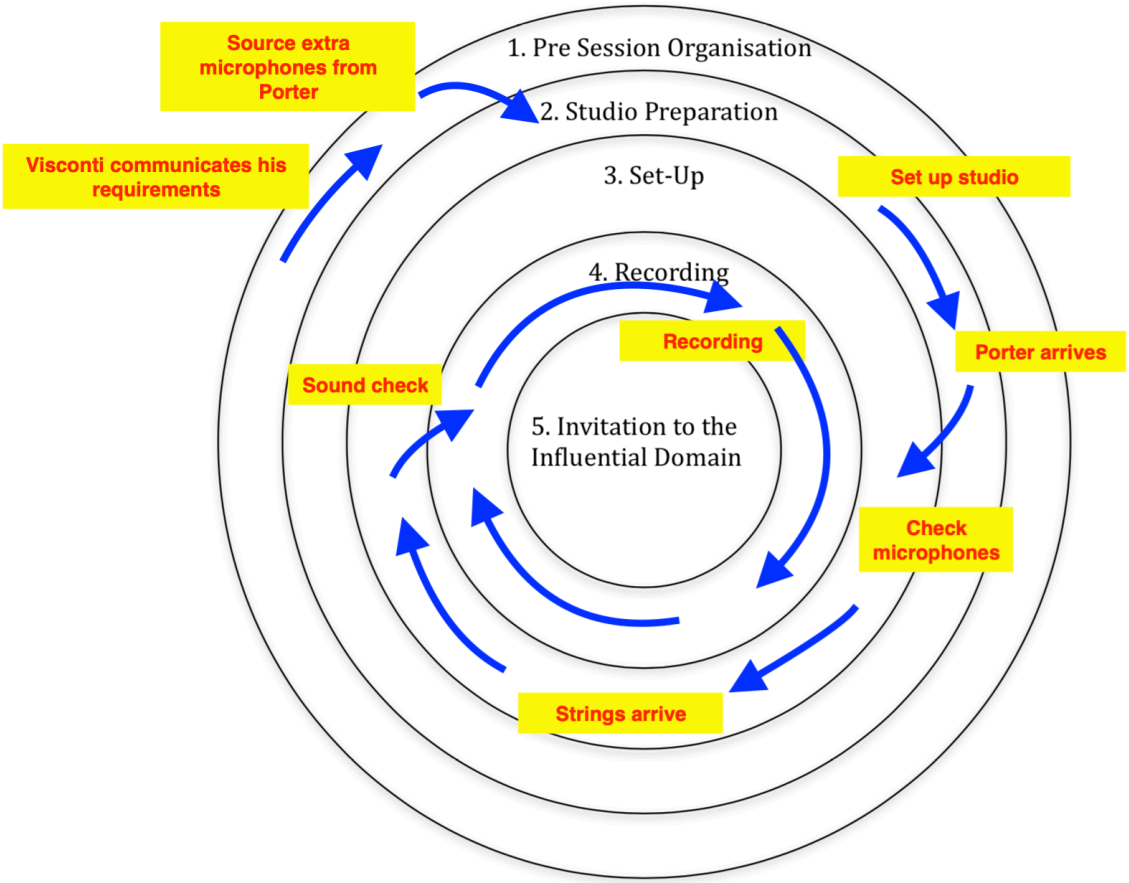

Figure 6. Ralph McTell session's creativity gears

case study, this is not a creative session for the engineer, hence the terminal arrow shows constant spinning of the fourth gear.

Case Study 4

This session was a two day session to record two singles for Romances, a rock band that I had previously worked with on multiple sessions. The producer was Ian Davenport (known for his work with Radiohead, Gas Coombes, Band of Skulls) and he wanted to achieve similar results to previous Romances releases, but to also incorporate something of his own personality and aesthetic to the sound of the production. As a result, we were making joint creative technical decisions from the onset. These included a snap decision to record the rhythm takes to tape, microphone swaps, and changing the layout of the live room. Romances is a band made up of five session musicians: Jesse Smith (Vocals), James Ashby (Guitar), Christian Mendoza (Guitar), Soufian M'aouri (Bass), and Alex Marchisone (Drums).

In the lead up to the session, Davenport had expressed over email how he wanted to experiment with a Glyn Johns[7] technique using a pair of Coles 4038 ribbon mics and the large live room. Through the email chain Davenport and I compiled the input list for the sessions, including creating new space for the rack of outboard Ian would be bringing and temporarily integrating into the studio.

Preparing the studio for Romances is something that I have experience with, and as such, felt confident with. Since April 2017, we have worked together four times and I feel I have a secured knowledge of their preferred workflow, how they like to work, and what their priorities are. What makes this session with Romances unique to all of the others I have participated in with them is the presence of a producer. Up until this session, Romances could not necessarily afford a producer and often the mix engineer had not been chosen yet. This made my engineering style cautious, non-committing usually over mic'ing in order to give the mixer the greater amount of options. What was most striking about Davenport was his attitude towards takes, fidelity and commitment. It was clear that highest on his priorities was feel, distinguishing between takes as to whether they "had the hips" or not. His attitude towards fidelity was that the feel and excitement of a take was more important.

For the drums in this session there were only 8 microphones, which may not sound small but they weren't the usual techniques. Instead we used a kick in, the Glyn Johns

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[7] Glyn Johns, most noted for his work with Led Zeppelin, pioneered a drum microphone technique using three microphones, equidistant from the snare: one overhead, one to the side, one in-front of the kit.

three microphone technique, snare top, a PZM on the floor under the snare and two mono room ribbon microphones at different distances. The use of the Glyn Johns technique and the mono rooms leaves you very little option for how to mix the drum kit. You couldn't, for example, decide to go for a very wide mixed kit for certain sections of the song. Davenport also worked and processed the sound as much as he possibly dared before the tape machine. The drum rooms were going through transient designers which he would open and close as the structure of the song unfolded. The bass was DI'd to go through a heavy saturation and compression circuit, before being paralleled to the tape machine at the same time as a guitar amp (not bass amp).

It was clear during the process of sound checking, selecting outboard, and tracking the first takes, that he was already within the influential domain (often inviting me in) and experiencing the beginnings of creative immersion. The simple change he had made to Seay's model, is that there was now a smaller annex the influential domain in the shape of the control room. What Davenport was doing, didn't necessarily invade their creative space, although he was committing to a lot of decisions, but he had created his own space.

Once we had chosen the master take (according the the amount of "hips" Davenport had assigned it) and filled up the tracks of the tape machine for each song, I dumped the audio into Pro Tools to begin overdubbing guitar parts. Usually, with Romances, we would break down what we weren't using, and turn the live room into a sonic playground for a guitarist. Davenport didn't want to do this, even stopping Marchisone from dismantling the drum kit. Davenport wanted to continue with the sounds and tones we had already found and began recording overdubs for everything and anything that he heard was missing each time we listened to the track. Some of these overdubs were unorthodox: extra snare overdubs, a deliberately lo-fi hi-hat overdub, and yet another re-amp of the bass guitar through a guitar amplifier. Davenport was clearly experiencing creative immersion throughout this session. There are similarities here between how he built up the sonic landscape of these recordings to realise the ideas he had for the band's music, and Visconti's creative immersion when arranging backing vocals in the previous case study. Both happened in response to feeling and/or the creative atmosphere of the session itself, neither were planned for in advance.

Influential Domain

Davenport mainly hovered around the area of "Daredevil" in Bennet's *attitudinal matrix*. This is proven by taking the risks of committing to processing and also committing the rhythm tracks to tape. In addition to this, Davenport still had strong elements of a "music first" mindset. His commitment to getting the right feeling take was assisted by the way he motivated the band. Davenport did so by not sitting down during recording, dancing along to each take whilst taking notes, communicating positively with the band whilst allowing them to run their course and try their own experiments.

In this session I witnessed a band and a producer having a lot of fun, and experiencing creative immersion which in itself is fun to witness. My previous experience with Romances made getting permission to access the influential domain easier. Often (in sessions without producers) the band will use me as a soundboard for ideas, and sometimes the final decision maker when they are struggling to come to a decision, or are stuck in a democratic deadlock. However, in this session, I felt that Davenport was the person inviting me to cross into the influential domain with discussions of creative decision making between the two of us in the control room. It was during the processes of formulating an idea together, setting it up, and auditioning the idea, that I felt immersed in the shared creativity. This took a different form of collaboration than mentioned in the previous case studies in that I felt less collaboratively engaged with the band, and much more collaboratively in tune with Davenport. The band very much owned the influential domain, but as I touched on earlier, Davenport had created an annex to this within the control room which he continuously invited me to take part in, and it was here where I experienced the creative immersion.

The Gears

In terms of creative momentum, the crucial moment of this session is when we dump from tape to Pro Tools. This disrupts the session so it needs to be completed quickly, but obviously also very carefully. The transfer needs to be of a high quality, but you don't want to have the band waiting on the transfer for too long. Too long and when we head back into fourth gear there won't be enough momentum to be invited into the influential domain.

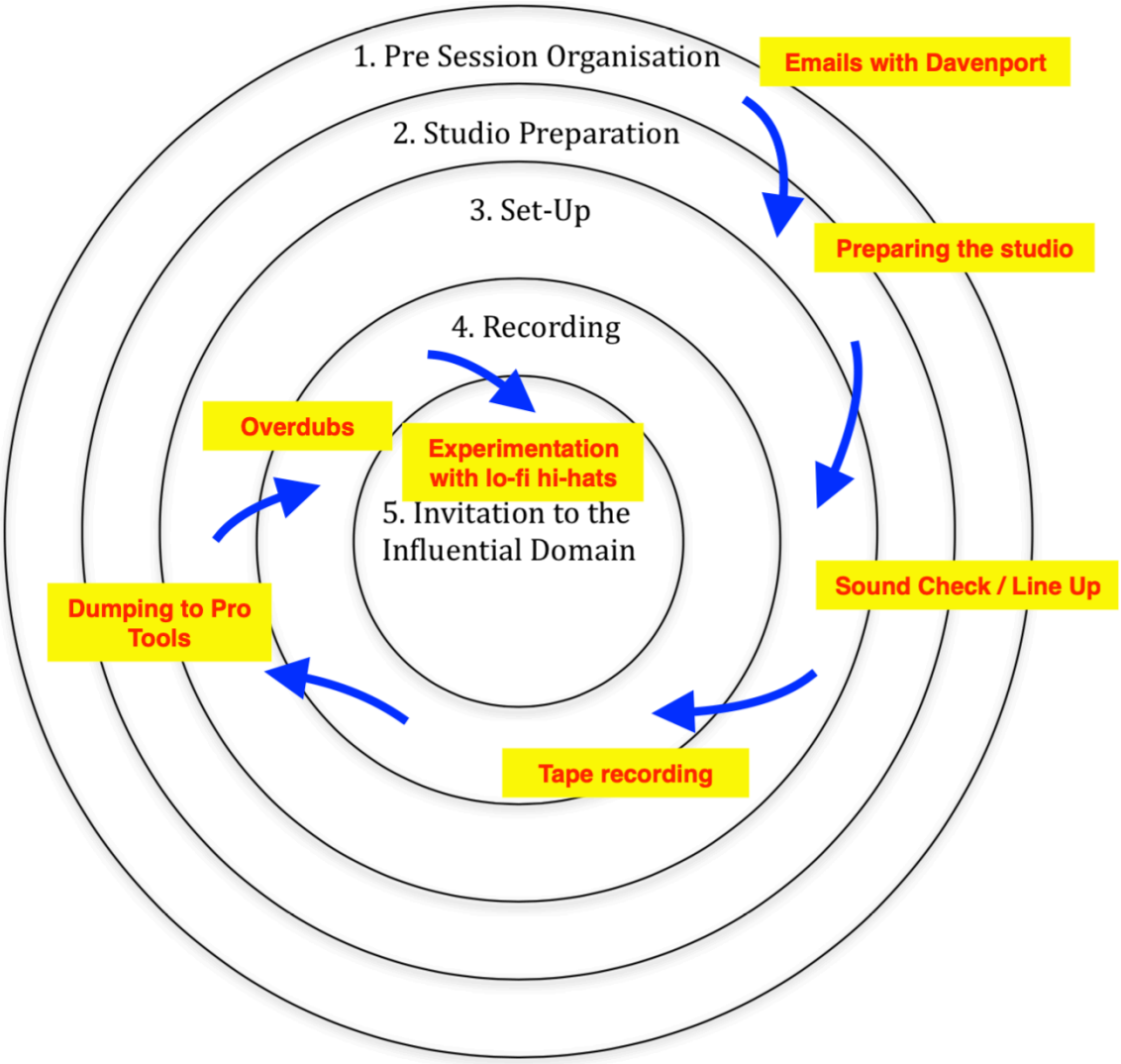

Figure 7. Romances session's creativity gears

Case Study 5

This case study serves as an example of how parties within the recording and production process can stall and destroy the momentum of the creative gears. Because I deem this to be a sensitive subject, the names on this session will be entirely redacted. The session took place at Visconti Studio in May 2018. This was a choral session that was first brought to my attention in August 2017. The Musical Director was looking to record an album of choral music at Visconti after hearing the previous experience I had on classical sessions. We met at the studio in September to discuss the set up and ambience of the recording. The MD seemed to every reassured by the ideas I had put forward to him about the way in which we would record the choir within the space, but achieving a traditional sound too.

During this period (the first gear) we discussed the arrangement of the choir, use and tuning of the piano (which we used little of), and the planning and booking of the sessions. The planning and booking of the studio is the first part on this session that was not ideal. The MD asked my opinion of how long to book the studio for. My response was that an entire album of choral music is a physical challenge for the members of a choir. In many ways this would be more tiring than a concert as we would be repeating the repertoire to have takes to choose from. I advised that we should look at booking a weekend. I would arrive Friday night to prepare and we would then record Saturday and Sunday. This email was ignored. The MD decided to book one day in the studio, and during the communications leading up to the day seemed to be increasingly nervous about the day, asking to double check many parts to the day which we had already set in place and agreed on.

The day's recording went seemingly well, the biggest challenge was having a good quality piano recording in the room with such a powerful choir, this was only for a few pieces though. For ease further down the line with this project, I used stereo pairs in the rooms, and then dedicated channels for each section (Sopranos, Altos, Tenors and Basses); this would allow for control of the volume of each section should we need it. For the sake of speed, enabling us to record this all in one day, I recorded the takes horizontally in Protools (like you would on a tape machine) and not in playlists of each song. This helped with the speed and efficiency of the recording, however made some of the requests later in this project more time consuming to complete. The choir were recording without a click, and when the piano was not accompanying them no backing to tune to.

At the end of the session, the MD had written a list of which takes he wanted me to edit together. I submitted these to him later in the week, only to find large problems with the unaccompanied pieces. Due to the length of the session and fatigue of the choir across the day, the knitted together takes dropped in key as they were performed and also changed tempo. The MD had decided this was not acceptable and wondered if the solution to this problem was “flex-time” and “auto-tune”, something we had spoken about previously but I hadn’t set the expectations of these two methods very accurately.

To quickly explain the boundaries of auto-tune, companies like Melodyne (probably the industry leaders in this) have developed a tool where when you record a singer in a booth, you can correct and tune notes. The bigger the interval you try to move the note, the more noticeable it becomes, the faster the attack time is (the speed it tunes) the more noticeable it is; think Cher’s “Do You Believe in Life After Love?” In my experience auto-tune is either something you use to catch mistakes on one voice, or as an effect. The more voices you ask one iterations of the plugin to tune, the more likely you are to hear artefacts. This is mainly created by the plugin trying to find all of the fundamentals being sung, move them and then struggles with the extra harmonics (that makes the voice sound like that person or group of people, and also the sound of the room). All of the recordings were completely live with this choir, there was no individual microphones, only sections and no isolation as we wanted a large amount of reverb recorded. This was almost the opposite of an ideal environment for auto-tune to work on, yet the MD was adamant he’d seen in adverts of plugins that this was possible. Despite my efforts to try and dispel the idea that it wouldn’t work, the MD then wanted me to try this with numerous combinations of takes, my previous set up of recording linearly in Pro Tools became quite a hinderance and this did take longer than it should.

Before too long of this back and forth, the MD began questioning my ability to do the job, at which point a fellow engineer at the studio, with much greater experience and credits stepped in to reinforce my point. I was paid for the previous work and the project was stopped.

After six months of thinking the project was over, something I was indifferent about, I received a phone call from the MD asking if I was willing to begin working on the album again. My previous experiences with this client meant I was very quick to lay out my terms and set achievable expectations. I was not going to be performing any more auto-tuning as it was a waste of our time and the choir’s money, this was going to be purely

balancing and editing takes, and I would not submit the complete mixes until I was paid in full. The MD declined (not very politely) and the project was never finished.

Due to myself and the MD having different understandings of the possibilities in digital recording, and the fatigue of the choir, this session was a waste of money for the choir. Although, from a technical point of view some of the gears were completed, the lack of constructive communication between us stalled the creativity in the session and pulled us outwards to previous gears, stalling the creative process and resulting in a project that was never released.

The Influential Domain

This case study has the smallest influential domain. Similar to the string session in the third case study, the genre of recording left very little creative input for me (the engineer) to exhibit. The rehearsed nature of the pieces meant that creative decisions were mostly regarding the timbre and performance style of the choir, directed by the MD, but there was not much, if any, experimentation with this. Due to the constrained time in the studio, and the genre of the music, this level of creative decision making would have been made in rehearsals prior to the recording. The choir were clearly in the influential domain as they had authorship over their vocal sound and performance, but it was in a prescribed manner.

My decisions in how to prepare the studio acoustically, and my choice of microphones was certainly creative, however it was prior to the recording in order to provide the MD with the sound he was looking for. In addition some of the editing and processing used to try and meet the MD's expectations were certainly experimental and creative. This was not collaborative, therefore not Creative Immersion, and due to the nature of the work I did not achieve a flow state.

Case Study Reflections

Successful, and meaningful, invitation into the influential domain, and achieving Creative immersion would result in contributed something to the finished project (a clear example of which is the drum sound in the first case study). When I listen to the finished

product I feel some sense of authorship of the drum sound, live band and vocal sound of this record and believe that these elements would have sounded different if they were engineered by a different person. The decision-making responsibilities contained with the tasks associated with my role allow for subtle creativity (timbral, textural) to become embedded in the whole. The invitation to participate inside influential domain allowed me to contribute more creativity than is associated with my role's responsibilities, and as such I was able to share the experience of collaborative creative immersion rather than merely facilitate it.

Creative immersion in this instance had very much the same reported side effects as *flow*, and I certainly experienced joy, motivation and temporal momentum. Being there as Baines and Pink dash from room to room vocalising, creating and recording the guitar parts in a state of creative immersion gave me joy as an engineer. To be part of, or facilitating someone's creative immersion, but not necessarily be within it is still a gratifying sensation. It therefore motivates and increases productivity not only in those experiencing it, but those who witness it.

Returning to the sense of some authorship of the sounds that engineers help record, a tape-based workflow this feeling is even more apparent. When calibrating a tape machine, you have to align the level on the way out of the tape machine first, along with the EQ of the output of the tape machine (once for each track on the tape machine). Then you set the record level (on the way into the tape) and the biasing before equalising the input of the tape machine, and then testing the machine with reference material. Once happy, you begin the whole process again with the Dolby SR. The decisions made here are clearly going to effect the overall timbre and sonic character of the record. Secondly, when a tape engineer edits or performs a drop-in during a session, they are also applying their hand and influencing the sound of the recording and the final product. For example, "Finale" was originally 7 minutes, 15 seconds long. We later edited it down to 2 minutes 29 seconds.

Experiencing flow and creative immersion whilst fixing problems and working to tape was a confidence-affirming experience. Fixing/saving a session instantly grants you respect from the artist/band, but due to the scarcity and expense of working with tape, bands often show respect in the tape-based editing process that they wouldn't afford to an engineer when editing in the digital domain. On this subject, Rick Beato (producer, songwriter and composer who has worked with: Shinedown, Rival Suns etc.) on his YouTube channel,

looks at Brendan O'Brien's (Soundgarden, Pearl Jam) recording and production techniques and states:

> [After playing some examples] One thing I can say is that Brendan loves piccolo snares because there's pretty much a piccolo snare in every one of them. Also the pitch of the snare…is virtually identical in every song. So as we're going from Pearl Jam, to King's X, to Train, to Audioslave, [and] Rage Against the Machine we have the exact same pitched snare, its obvious. Brendan's mixing style does not make use of samples in the way a typical mixing engineer would. Many mix engineers use samples because they're not the ones doing the producing, and they use it as a way to control the low end and the ambience of the tracks and make them consistent as well as making them able to mix a song in one day….Brendan is doing this by the way that he is tracking them. The snare , in all these cases, is tuned in the range of a piccolo. What you're hearing is the room mics really compressed and there is a close mic on the snare with reverb on it…. His records have a signature sound to them. (Music Production - Brendan O'Brien Music Production Techniques Explained, 2016)

Looking at O'Brien's credits, notably the records which he engineered and not just mixed, there is clearly a signature sound to his work. It could even be argued that O'Brien helped to establish the iconic sonic signature of 90s-era U.S. rock music. This is just one example of many, in which the engineer brings their signature sound to the collaborative projects they share. I may not be able to point to a certain signature across the case studies, however there is creative territory where I have agency within my role, for example with the drum recordings on all of the case studies, I chose the specific microphones, positioning techniques and preamps. I received one directive from Visconti during his session, regarding the drum recording - "not too many microphones". Working in a large live space gives you additional creative territory and environmental affordances to exploit, particularly when recording something as dynamic as a drum kit. The large walls of the live room and windows have movable acoustic curtains along them creating a large scale of reverb time from shortest possible (all curtains shut) to longest possible (all curtains open). Combine this feature with 300m² of drum and microphone positioning to play with and you can begin to get stark differences in drum sound from set up to set up. As a result of this, an engineer might find spots, and setups, they prefer and begin to use more heavily, which begins to create the basis of a signature sound. Where I placed the drums in the room may not be where other engineers would have put them, therefore I (the engineer) have left my fingerprints on this record.

The case studies clearly show how to achieve high levels of creativity by navigating the gears. Case study 5 shows how communication is the most important part of the

process. In the previous four case studies, expectations are set and defined quite clearly, very early on, allowing the sessions to be as creative and productive as possible. However, as I did not communicate effectively the time required to record the session, and latterly the limits of auto-tune, the MD's expectations were impossibly high. When the results were not matching their expectations, the communication became less effective and the relationship deteriorated.

A good measurement of a successful relationship with a client can be measured in the communication and potential of a return booking after the session has finished. In the first four case studies (and many other sessions), I am in regular communication with those clients, having worked with them on subsequent projects too. The client in case study 5 made no further contact or enquiries.

Chapter 4: Conclusions

By plotting the milestones of the session across the gears in the model, we can identify the points of strongest creativity within the studio, but more importantly identify the moments that are causing creative stalls. This form of research on collaborative creativity in a recording studio, taking into account the engineer's practices and experience is useful because it illuminates the collaborative creative experience, as experienced and shared by technical and support staff. It also allows us to analyse the creative/social dynamics of production teams working in large format studios, charting the territories in the environment, with the technology and technical processes, where sound engineers make creative decisions that impact or inform the sonic and/or musical character of the final product. This is a subtle form of authorship that can be cultivated into a sonic signature with potential to impact the development of whole genres of music. Further to this, and dependent on careful building of a trusting, safe and professional environment, the sound engineer can be invited into the influential domain, contribute significant musical ideas beyond the original remit of their immediate role, and share in the experience of creative immersion.

This model has some limitations but can also be effected by external factors. The journey from first to fifth gear is not only facilitated by the engineer. All staff employed at a studio have the ability to help facilitate and, or, obstruct this journey. For example, in the first gear, there are responsibilities that would fall to a studio manager, including the introduction of the client to the engineer. In a situation where studio staff, or interns, are preventing the growth of creativity in a recording session, it is the responsibility of those helping to facilitate creativity to rectify the issue. This may be as abrupt and as simple as asking them to leave the studio for a while. As a member of staff at the studio they should appreciate how important the atmosphere is.

Similarly the artists or producers can derail the journey through the gears. In this case there is usually a misunderstanding about the expectations set (as seen in case study 5). In this example the MD is acting as producer, but due to his conduct, the journey to creative immersion was derailed at every step of the way. Engineers need to be skilled in establishing realistic expectations. In this session my advice to record over two days was ignored, but during the recording process, there should have been a conversation between myself and the director about how useable, or unusable, the takes were, and the very few

solutions available.

Although the engineer's aim is to not land in this type of situation, there is the outlying question of how to save and rectify such an occurrence. What isn't illustrated in the gears is how to navigate back onto the path of creative immersion. How do we regain trust in a recording session?

Similarly, we could also ask whether this model could be used to display creativity in other art forms (e.g. film). With some adaptation this is certainly possible. When we think of film making, and film sets/locations, there are many parallels to be drawn to the recording studio. The director could be linked to the producer, the film crew to the engineers, the actors to the artists, and the screenwriters to the songwriters.

This research, and the model I have created not only allow for fast constructive analysis of past sessions, also provide direction into how best to plan a recording session with the aim of having peak efficiency and potentially high levels of creativity. The model itself can be applied to smaller studios, but is most effective and relevant for agents working in traditional/hierarchical teams in large format recording studio environments.

The processes and procedures of a large format recording studio are invaluable because of how unique they are. There is nowhere else where all of these these elements of left hemisphere thinking, right hemisphere thinking, creativity and technical knowledge collide together in this way. For example the skills needed to use analogue equipment such as tape machines, outboard and desks are instantly transferrable making the engineer more desirable to an employer. Their role in the experience of creative immersion, regardless of whether it is the engineer experiencing this or another member of the recording session, is vital and without the engineer it becomes almost impossible to achieve. The engineer thrives on collaboration and creative immersion is a collaborative form of flow that contains unwritten rules regarding trust and respect that one has to follow to achieve it.

The large format recording studio's role in this is to become the safe space for those involved, and when the studio meets the expectations of the artist we begin to form the safe space around the artist, they begin to feel like they have made the correct decision in choosing this studio. However, with studios disappearing from the London music industry at an alarming rate, there will soon be no where for these skills and practices to be taught and transferred on to the next generation. There are very few studios that run with the hierarchy of producer, engineer, tape operator, intern, with permanent in-house staff that have intimate knowledge of the facility and its resources. The responsibility for this

training can be taken up by higher education facilities, however the pedagogical approach has the potential to be problematic. If we look back to Bennett's *Attitudinal Matrix,* higher educational facilities much prefer teaching the technophiliac side of record production than the traditionalist. Due to the decrease of funding across all music education, such facilities must run courses that are able to have a large number of students attend with a manageable technical specification. For example it is impossible for a lecturer to effectively convey to 20 students in a control room how interpersonal and musical skills enable an engineer to become successful when fostering the most creativity in the studio. Instead the focus is on DAW based skills, as this can be taught in one room with lots of students in attendance.

These skills present a challenge in how to teach them in an education facility. Often a student may not experience the pressures and dynamics of a professional session within their own coursework. A combination of using the current teaching format to enable high technical skills and the large format studio's culture of passing down skills would be a strong solution. For example, Visconti Studio offers internship slots on commercial sessions to those students who apply that have shown strong technical and musical ability. They then can experience the dynamics and train their interpersonal skills needed in recording sessions.

The selection of skills an in-house recording engineer has are very broad. They must have strong musicality, be very efficient in a DAW, be able to fix (basic soldering required) and maintain equipment, have confident knowledge of signal flow at that studio. These are all very strong skills that would make the engineer hot property for the industry. The issue is that with the current decline in studios, less people will be taught these skills, the skills that I have gained through being the in-house engineer for Visconti Studio. On top of these skills, when invited to the influential domain, the engineer begins to really leave a signature on the sound of the recording. This is another product of the large format recording studio and is something that could very quickly become forgotten. The engineer's authorship of sound is paramount, I don't sound like Brendan O'Brien and he doesn't sound like me.

The large format recording studio, and its ways of working, is an important part of recording culture that should not be allowed to slip away into history. It creates multitalented engineers with strong interpersonal skills. It becomes a safe, supportive space that allows artist to really explore their own creativity. Most importantly however, the large format recording studio is the place where collaborative creativity is key, and when

navigated correctly creative immersion occurs.

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